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THE AMERICAN DIETETIC ASSOCIATION

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The Journal of

The American Dietetic Association

SOME CONTROVERTED QUESTIONS IN NUTRITION*

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One is sometimes considerably disturbed at the controversies that arise in science. We are all familiar with such controversies. We think that if scientists differ there is no reason why other people should agree. There is probably no subject in the world on which people differ so much as on the subject of diet. In the first place, consider the great diversity of diets which people in various parts of the world consume, and upon which they manage to do fairly well.

Sometimes after allowing a question to lie untroubled for a season, the answer comes without disappointment or bitterness to anyone. An illustration of this fact is the old question, was primitive man herbivorous, fructivorous, or omnivorous? Darwin ventured the opinion that man's ancestors were fruit eaters, basing this view on the statement of Cuvier that the dentition of man more nearly resembles that of herbivorous animals than of carnivorous ones.

Virchow very promptly disputed this opinion of Darwin, pointing out that primitive man was aways the pupil of force and necessity; that he must have been at times compelled to eat animal food in order to get sufficient nourishment. Along the same line it has been argued that other species are known to have changed radically their habits of eating by some unforeseen circumstance. For example, since sheep growing has become common in New Zealand, a species of bird which formerly fed on berries and fruits has, I am told, become a bird of prey, killing

* Presented before the Thirteenth Annual Convention of the American Dietetic Association, Toronto, September 10, 1930.

and consuming sheep by the thousands every year. In South Africa, since the *rinderpest* became a serious disease, a bird which formerly was never known to consume flesh has become a scavenger, eating the ears of dead animals and picking holes in the skin and limbs. In all probability, primitive man found many opportunities to satisfy his hunger by descending from his arboreal home and feasting on fish, snails, insects, or worms. In fact, the Papuans, a tribe which has recently become extinct, are known to have lived on such food, and it is believed that the Neanderthal man was even lower in his habits of feeding than the Papuan.

Judging by the alimentary organs, it has been argued that the arrangement, size of the organs, etc., is much more nearly like that of the carnivorous animal than like the herbivorous animal; and Simroth has asserted that it would be easier to nourish a cow on meat than to nourish a lion on vegetables. That rollicking book, distributed by the United States National Park Service, under the title, "Oh, Ranger," tells the amusing story of the ranger whose pack mule ate his catch of trout as fast as he could throw them on the bank. Perhaps every person who has had much experience with ruminant animals has witnessed incidents as striking as this.

On the other hand, we are told that carnivorous animals, like dogs and cats, frequently have been seen to eat grass, flowers, catnip and the like, leading many to suppose that carnivorous animals have some mysterious instinct which guides them to a plant which will cure a sick feeling.

Many faddists in nutrition would like us to believe that man should eat only this or that class of foods, or that he should carefully eschew some particular class of foods. The argument is usually based upon some personal experience or narrow observation. I recall a conversation with Eugene Christian, the raw food exponent, who came to Washington during the war and tried to induce the Surgeon-General to put the army on a ration of raw foods. He told me that he was led to adopt this diet of raw foods by the discovery, when he was a young man, that eating sour grass in the Spring is a cure for spring fever and other ailments incident to that season. He told me, also, that he fully expected to live to the age of one-hundred, and boasted of his physical prowess, as other food faddists have been known to boast from time immemorial. He died at a little over sixty.

The science of biochemistry has solved this age-old problem of whether a man should live only on vegetable food, or whether he should be al-

lowed food from animal sources. As soon as Emil Fisher and Kossel had taught us that proteins consist only of amino acids linked together in various ways to make longer or shorter chains, and therefore simple or complex proteins, physiologists began to study the nutritive value of different amino acids. It is familiar knowledge to all that Osborne and Mendel, and others working along similar lines, have now proved conclusively that certain of these amino acids are quite indispensable to the growth and nutritive well-being of various kinds of experimental animals. McCollum also has shown that all of these amino acids may be found in the seeds of plants, but he points out how difficult it is to get a satisfactory combination of different seeds or different vegetable foods so as to supply all of the amino acids in adequate proportion. It is much simpler to supplement vegetable food with a small amount of animal food, such as milk, meat or eggs, and thereby provide an adequate supply of protein. The old controversy narrows down in terms of biochemistry to this: Can we get an adequate protein for growth and reproduction and all the other normal functions of the body by eating vegetable food alone? The answer is, emphatically, that in the practical sense we cannot. Here we have the solution to the old question of whether primitive man was exclusively a vegetarian or was omnivorous. We can scarcely suppose that primitive man was different in his protein requirements from ourselves. This being true, the old controversy is settled without disappointment or bitterness to anyone, so far as I know, by the simple means of appealing to modern science.

Another question which has been controverted for at least fifty years is that one known most familiarly under the name of *luxus consumption.* Lehmann and Frerichs, about fifty years ago, gave this name to the phenomenon which they thought they had established in their researches, namely, that the more a man eats, the more he burns. We were taught, thirty years ago, that the matter was settled conclusively by the establishment of the law of the conservation of energy by Rubner, and also by the so-called Pflüger's law, which states in effect that whenever a person digests and absorbs more energy than his body requires for the time, he inevitably stores the excess as body fat. Carl Voit also declared that the energy requirements of the body were definitely fixed; that they could not be changed materially or fundamentally, even by the most extreme changes of habit, except in degree of muscular activity, exposure to temperature, and the like.

About 1911 Grafe (1) published researches which seemed to prove quite conclusively that a man may, and a dog certainly does, metabolize

far more food if given the opportunity to consume more food than he needs, even in a resting condition. Grafe's work has not convinced many students of energy metabolism, but many clinicians are inclined to accept it as supplementing their own observations of a discrepancy between food intake and maintenance of weight.

In another form, this question of *luxus consumption*, or luxury consumption of food, to give it the English instead of the Latin name, is the question of the constancy of basal metabolism. Again, it is the question of the secondary dynamic action of food. Let us speak briefly, first, of the question of the constancy of basal metabolism. Can we change the basal requirement of energy by altering our dietary habits? Suppose, for example, we have been living on a low, or at least a very moderate amount of protein, and suddenly we change to a diet consisting of a very large amount of meat, eggs, fish, game, shellfish, and the like, such as the middle-age feudal baron is supposed to have consumed without difficulty. After a period on this kind of diet, would the basal metabolism be altered? Grafe's answer to this question is emphatically affirmative, particularly if the calorie intake is also increased at the same time as the protein intake. He shows in one of his charts that a dog nourished for a time on 300 per cent of its calorie requirement exhibited a forty per cent increase in basal metabolism, taken from thirty to fifty hours after the last food ingested. There can be no doubt that the dog was in a truly post-absorptive condition, and, according to the author, was perfectly quiet when the basal metabolism was measured. Others have answered this question negatively. Recently, Dr. DuBois directed an experiment (2) on two arctic explorers, Stefansson and Andersen, who ate nothing but meat for an entire year. It is true their protein intake was not over seventeen per cent of the total energy intake at any time, and this is not a very high percentage of protein calories, although it is somewhat above the average, even for the American, Canadian and English armies in the late war. The rest of the diet in the case of Stefansson and Andersen was made up of fat. At the end of the year their basal metabolism had not increased above its level before the experiment started. Dr. Chi Che Wang (3) and her associates have recently published researches to the same effect. They found the same basal metabolism in all of their six women subjects, whether they were living on two grams of nitrogen per kilogram per twenty-four hours, or on six-tenths gram of nitrogen.

In children, Helmreich (4) reported about six years ago that the basal metabolism can be altered at will by changing the level of protein and

calorie intake. For example, he gave a child 2000 calories in the form of milk. The basal oxygen absorption at the time was 190 cc. per minute. Changing the intake gradually at intervals of two to five days, until it reached 3800 calories daily, the basal metabolism was raised to 233 cc. oxygen per minute, or an increase of a little over forty per cent. Baer (5) has recently confirmed Helmreich in a series of experiments of very similar nature on infants. She has shown that the basal metabolism may be altered as much as thirty per cent by increasing the calorie intake of children up to 170 calories per kilogram per twenty-four hours. The conclusion of these authors is that basal metabolism is not at all a fixed quantity, but that it is dependent upon the kind of diet which the person habitually consumes. Falta and Krogh have long believed in the accuracy of this statement, and both specify emphatically that before taking the basal metabolism the subject should live for at least a day, preferably two days, on a low or non-protein diet, and on a very moderate calorie intake. Others, DuBois in particular, believe that in order to change the basal, it is necessary to alter the diet quite radically.

To speak very briefly of the secondary dynamic action, which is simply another name for luxury consumption, let me remind you that Rubner, who also believed in the constancy of the basal metabolism, nevertheless proved in the case of protein that there is certainly a secondary dynamic action. By this we mean that a protein diet not only raises the heat production for the first few hours after it is ingested, but if the diet is continued for many days the basal level also gradually rises. He proved at the same time that with fat, this is not the case. His subject, a dog, ate larger and larger amounts of fat without raising the energy production.

This is an extremely important question, and its answer will give us a true explanation of why some people eat a great deal of food without becoming fat, whereas others seem to grow fat without eating "any food at all," at least according to their own account. If the luxury consumption is a reality, it simply means that there are certain individuals who can burn more and more as they eat more and more; but if this is true in some cases, why should not the converse be true in others? This by no means refutes the law of the conservation of energy. If luxury consumption is occasionally a reality it may mean merely that in some the organism responds to the stimulus of food and lights up the fire, just as the automobile responds to the throttle feeding in more fuel. But our figure of speech breaks down for the individual who does not exhibit luxury consumption. The fuel in such a person becomes a part

of the body if it is not burned, while an automobile exhibiting such a disposition of its fuel would be a queer sort of mechanism.

I think we must conclude for the present that we have not as yet sufficient proof of luxury consumption, or of variability in the basal metabolism, to accept it without question. Certain it is that in order to change the basal metabolism, as measured, of course, fourteen or more hours after the last meal, a night of sleep, and at least half an hour of perfect repose, the diet must be changed quite radically in the amount of protein, and possibly also in the total calories. Most adults certainly go from year to year without material change in the basal metabolism because their habits of living are standardized. They eat nearly the same amount from day to day and expend about the same amount week in and week out throughout the year.

A third question which has been actively controverted since the early '90's, or for approximately forty years, is the question of the fuel for muscular work. What do we burn when we take athletic exercise?

One school, started by Chauveau, the French investigator, believes we burn nothing but sugar in our muscles. Another school, headed by Zuntz, who answered Cheauveau, believes that fat in case of emergency can be burned in addition to or in place of carbohydrate, though not quite so efficiently. Many are familiar with the arguments on both sides of this question. At present, the leader of the Zuntz school in this country is Lusk of Cornell, and the leader of the Chauveau side of the argument is Macleod, who has not changed his point of view in changing his residence from Canada to Scotland. Why does this controversy go on? We thought we had an answer a few years ago, when Hill and Meyerhof published striking results on the heat production of isolated frog's muscle. It seemed almost conclusive that the muscle, at least after it has been taken out of the frog's body, burns nothing but carbohydrate in the production of the energy of contraction. Recently, however, both of these authors have deviated from their former statements, and are by no means so emphatic in their present belief that the muscles can use only sugar. Hill has been obliged to admit from experiments done in his own laboratory that a man, running, exhausts his supply of glycogen in a few minutes, and then burns fat. On the other hand, instances are known of men who can run for hours at a time, and supply enough glycogen to keep the muscles working. Observers of such cases must argue that carbohydrate can be formed from fat. This possibility, therefore, becomes the crux of the question, can we make sugar out of fat? We know, of course, that our own bodies, like those of many other animals, can produce fat from sugar or from starch

which goes through the stage of sugar in digestion. Can we reverse this process, when necessary, to produce glycogen? The difficulty is in finding a crucial experiment to which all parties to the argument will agree.

Those who have studied acute diabetes in the dog, whether it is produced by removal of the pancreas or by poisoning with phlorhizin, have long since been convinced that, provided all the glycogen is removed from the body by administration of adrenalin, there is no possibility of increasing the output of sugar beyond a certain fixed proportion in relation to the nitrogen output of the animal. When fat is fed to, or injected into such an animal, it never increases the output of sugar. It is chiefly on such evidence as this, confirmed also by the evidence of careful studies on human diabetics, that Lusk and his followers believe so strongly in the improbability of the conversion of fat into sugar. There is, however, gradually accumulating evidence which makes this conversion of fat into sugar seem a little more probable than it did a few years ago.

In our own laboratory (6), we have recently had experiments on the respiratory quotients of individuals who have consumed large amounts of fat. When carbohydrate is being converted into fat, the respiratory quotient goes above unity. If fat is converted into carbohydrate, and the carbohydrate is stored in the body and not burned for a time, the respiratory quotient should go well below the level of the combustion of fat, namely 0.7. We have seen such quotients[1] in our laboratory recently, and they are in agreement with random observations by others.

We have corrected these quotients for the formation of ketone bodies from the fat and for extra ammonia formed, and the quotients still are often low. Singularly enough, late in the experiment the quotient rises high enough to account for the combustion of all of the carbohydrate which could have been stored temporarily as glycogen instead of being burned at once, so that the net result is just the same as if fat had been burned throughout. It has been suggested frequently that the formation of fat, if it occurs, probably does so quite rapidly, in the intermediary changes, so that it is easily missed.

Whether or not we find the answer to this question in our experiments, it is certain that the answer eventually will be given so clearly and emphatically that both sides will be satisfied.

Controversy in science may be disconcerting to the layman, but it serves to sharpen our demands for unimpeachable and incontrovertible

[1] Later attempts to confirm these observations by an entirely different method of determination have not succeeded (October 30, 1930).

evidence. Without controversy we might be inclined to believe before being convinced.

The answers to some controverted questions come quite unheralded and unannounced; suddenly we realize that a complete answer has been given by someone outside the controversy. Other questions require only a little more evidence to make a solution conclusive. Again, the demands for evidence which shall entirely satisfy both sides to the controversy are exceedingly difficult to fulfill, but we have confidence, based on many such experiences, that eventually they will be fulfilled, and another step of progress in the slow, sure march of science will have been taken.

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THE DIETITIAN AND THE PUBLIC HEALTH NURSING PROGRAM*

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It is a well understood fact in the educational world that any change in curriculum must always be preceded by modification in the conception of education. Any appreciable change in the aim of education occurs only after long and often heated discussions among educators. Charters has gone so far as to state that "a change in the curriculum runs on the average ten years behind the advocating of a change in the aim of education" and that there must be much "theoretical discussion amongst educators" before any modification of the practical curriculum as it is taught in the class room takes place.

There has been much discussion during recent years relative to the aim of nursing education and there must be more, if any modification in the curriculum of nursing schools is to be made. Dietitians are responsible for the teaching of one of the more important subjects in the nursing curriculum; the more clearly they understand the why and wherefore of the changing conception of the function and education of the nurse, and the modifications in the curriculum as implied in this change, the more intelligent and effectual will be the assistance lent to the task of making the necessary changes in the content and teaching of the subject, which for the sake of convenience, I shall call "dietetics" but which, of course, embraces much more than dietetics *per se*.

The change in the conception of the education of the nurse has been brought about largely as a result of a growing realization of the tremendous possibilities of preventive medicine. The social significance of preventive medicine is only now being grasped, and promises to revolutionize the realm of medicine as completely and as universally as the practical application of steam and electricity to man's everyday life revolutionized the realm of industry. In fact, it promises to confer upon man one of the greatest of social goods that it has ever been his privilege to enjoy.

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As the program of preventive medicine has become more clearly outlined, the place of the nurse in this program has become increasingly important. In her rôle of health educator, she represents an important cog in the preventive medicine machine. Not only is there an increasing demand for public health nurses, but there seems to be a growing realization that *every* nurse must be properly prepared for health nursing, as well as for sick nursing, and that every student nurse must be given a fairly clear understanding of community health problems as they are found outside as well as inside the hospital. An increasing number of people are beginning to realize that the work of the nurse as a health educator equals in importance her function as a remedial agent, and it should be stressed therefore, that "prevention and cure should both be built into the structure (of nursing) from the foundation up."

The apprenticeship system of nursing in this country, which has resulted in hospital control of nursing education, has made curriculum changes in nursing schools peculiarly difficult. Hospital authorities support but half-heartedly any attempt to modernize the curriculum through the introduction of social and preventive elements. Changes of this nature are opposed largely because they, of necessity, reduce the total hours of service rendered by the student nurse group to the hospital sick, and because such changes promise to add to the cost of instruction.

I am led to believe that the apprenticeship system of nursing education will not endure many years longer, as social need is demanding more and more that the student nurse be prepared for both health and sick nursing. Hospital authorities doubtless feel that the policy they have adopted is quite justified, namely, the subordinating of the far-goal, the general preparation of the nurse for both health and sick nursing alike, to the near-goal, the rendering of nursing care to the hospital sick at the least possible cost. As the program of preventive medicine grows, however, the over-emphasis on sick nursing cannot continue, for social need dictates social changes, regardless of opposition of small groups. The preventive medicine program with the stress it lays on health education is not only creating a greater demand for nurses who have specialized in public health nursing, but it is creating a growing sentiment that every nurse, regardless of the position she may fill, is indeed a health educator and, therefore, a public health nurse in fact. The demand for more public health nurses, and the realization on the part of a larger number of persons each year that every nurse must be better informed regarding the community health problems, promise to speed up the changes in the nursing curriculum.

Nursing education today represents the educational ideas of a past generation; it is entirely out of harmony with educational aims and objectives of the present day. The hospitals in their attitude toward the education of the nurse occupy the same position today that stage-coach companies held in eighteenth century England with regard to steam-engine transportation. These companies, it will be remembered, spent vast sums of money and devoted earnest effort to prevent the development of railroads in England. Their argument was that such a development worked direct injury on the great numbers of people who were connected with the stage-coach business and that for "the common good," therefore, this new movement should be checked. This is one of many examples of social myopia that dots practically every page of history.

The education of the nurse will undergo marked changes in the coming decade if the signs of the times can be correctly read. Just how the control of nursing education is to be removed from the hands of the hospital group, or how the economic needs of the hospital are to be met, I could not possibly predict. I am convinced, however, that a happy and satisfactory solution of the problem of the education of the nurse, and that of the economic need of the hospital will be found. Certainly, in a country with our resources the solution, purely economic in nature, will be found when social need demands that it be found.

I should like to make myself very clear on one point. I do not feel the basic course in nursing should attempt to prepare nurses for the specialized field of public health nursing. I do feel, however, that the curriculum of the nursing school should contain much more social-health instruction in order that every nurse graduating from the school may have a real conception of community health problems as they are found outside the hospital walls. I feel that it is not enough to teach the nurse how to care merely for the physical needs of the patient, but she must be taught how to care for his social and psychological needs as well; all of this should be taught in the basic course. In other words, a better background must be given the student nurse relative to the all-round needs of the patient in the hospital and in regard to the community health problems as a whole. The actual preparation of the nurse for specialized public health nursing, however, must be largely secured through post graduate study.

This newer conception of the function of the nurse with the modifications of the curriculum it implies, will affect dietetics as well as the other subjects. It may even influence dietetics more seriously than other

subjects. In considering any change in dietetics, either in content or method, it is extremely necessary that we bear in mind the importance of nutrition in the community health program. This cannot be overemphasized. There are whole areas of our country where malnutrition constitutes one of the major health problems—sections where the introduction of dentistry and a working knowledge of proper food preparation and nutrition would alter the entire social-economic status of that community. Malnutrition is as prevalent in rural communities as in urban ones, perhaps even more so, and any community health program must take proper cognizance of this fact and make provision for solving this special health problem.

When I use the word "malnutrition," I do not have in mind a condition due to insufficient food because of a too limited family budget, but rather a condition which results from the constant use of improperly chosen food, or one due to the inability of the body to make use of the food eaten, because of physical defects such as diseased teeth, for example.

It is gratifying indeed to note the growing interest taken in nutrition as it relates to the health program in our larger cities. Health organizations, such as the New York Association for Improving the Condition of the Poor, the East Harlem Nursing and Health Service of New York, and many similar agencies throughout the country, are providing in their health programs for nutritionists and visiting dietitians. It is obvious that the problem of nutrition is on the way to receiving proper attention in the areas of concentrated population, but this is hardly true of our rural areas. Johnny's father may own a herd of cows, but milk may not be included in the daily menu of Johnny's family; or if milk is placed on the table, Johnny's food whims may be regarded, rather than his health needs. All too frequently vegetables from Johnny's father's garden share the same fate as does the milk. Improper selection of food in rural communities constitutes one of the most serious shortcomings in the food-health program.

The preparation of food constitutes possibly a graver shortcoming. Apparently we have labored under the delusion that some divine agency has made every woman a "born cook" as well as a "born mother." The number of agencies concerned with "the welfare of the child," as well as the rising flood of literature dealing with the proper development of the child, bears witness alike to the fact that the "born mother" myth is being vanquished and that we are less and less inclined to believe that the mystical insight and wisdom relative to the bringing up of the child is a natural endowment of woman. The myth relative to the "born

cook" is yet to be exploded. Much instruction must be given women relative to the family dietary, its choice, preparation and service, if the food-health problem is to be solved. This is particularly true in the case of the country woman. In cities, women may see food demonstrations in department stores; commercial organizations give free cooking classes; and courses in cooking may be secured easily by the interested woman. The city woman also receives considerable stimulation in regard to the matter of improving the "family table," because much of the food information she gets is gained through group activity. The country woman, as a rule, secures her information by means of radio talks, periodicals, and the newspaper column. She is not so likely to receive the same stimulation in regard to improving the family dietary as does the city woman.

It is difficult for me to foresee the time when preventive medicine will receive such support from public funds that it will be possible to place one or more nutritionists or visiting dietitians in every county, highly desirable as this may be. However, I can conceive of these same counties receiving the service of one or more public health nurses. It would seem, therefore, that for many years the gospel of nutrition and dietetics must be spread in the country areas by the public health nurse.

The newer conception of the function of the nurse, namely, that she is a health educator as well as a remedial agent, and the rapid development of the preventive medicine program, which promises to establish a vast network of specialized public health nurses from one end of our country to the other, demand that dietetics occupy a more important place in the nursing curriculum than it does today, and that every effort be made to enrich the content of this subject as well as to improve the methods of teaching it. Every nurse must know more about nutrition and about the normal family's dietary, both in regard to selection and preparation. What is most imperative of all, some means must be found through which the nurse's interest in the whole subject of dietetics and nutrition will be awakened. Nurses are likely to be indifferent regarding the subject of food as it relates to community health. This indifference must be broken down. It is serious enough when the nurse is disinterested in the diet of patients, but the dietitian is usually at her elbow and the patient does not suffer too greatly from this indifference. In the case of the nurse doing health nursing, this indifference may prove to be a calamity, for the dietitian will probably not be present. It is imperative that nurses be taught so that their interest in all phases of dietetics will be aroused. The teaching of dietetics, both in the basic curriculum

and in the post-graduate courses to the nurse preparing for the specialized field of public health nursing must receive much more attention.

Every nurse working in the rural community should be able to give the country housewife practical advice and aid in the selection, preparation and service of the family dietary. I should like to see this nurse able to do something with diabetic diets, etc., even though she may not have a full store of up-to-date equipment. She must be able, also, to explain to the parents the important part food plays in the posture, general development, vigor and health of growing Johnny. Interest in food problems and the ability to handle them in a practical manner are necessary if the public health nurse is to function properly.

How all this is to be brought about is a matter that concerns every dietitian and every nurse educator in the country. From my own observation of the methods of teaching dietetics to student nurses, I should say that it is a problem that concerns *method* rather than *subject content.* More hours must be devoted to the teaching of the subject known heretofore as "dietetics" and "diet in disease" if nutrition is to be properly covered. But the method of teaching is the chief problem.

It would seem that there are three major reasons why nurses at the present time are generally quite indifferent to the problem of food as it relates to health and disease. First, the organization of hospitals on a department basis tends to make the nurse feel that the responsibility of the patient's food is primarily that of the dietitian; second, the hospital dietitian holds her position on the basis of her success as an administrator, rather than a teacher; and third, [I feel that this is the most serious matter of all] constant exploitation of the student nurse takes place in the diet kitchen. The first point, of course, is a matter that can easily be overcome as the other points are corrected. I hope that we shall soon see the day when the administrative dietitian need not teach unless she is one of those gifted people who can teach as well as she manages a department. If the administrative dietitian lacks this teaching ability, there should be a dietitian attached to the hospital service whose chief function shall be to teach both patients and nurses. When the halcyon day comes and the control of nursing education passes out of the hands of hospital authorities, the exploitation of the student nurse in the diet kitchen of the hospital will no doubt cease. In the meantime, it is the duty of every hospital dietitian, as well as every nurse educator, to reduce this exploitation to a minimum. Not only is the student nurse compelled to perform duties in the diet kitchen which have no educational value whatsoever, but also she must perform activities which may con-

tain educational value when performed ten times, but when performed fifty times represent much waste of time, if educationally considered. Why nurse educators and hospital dietitians seem to be so indifferent to a situation which not only represents a waste of valuable teaching hours, but which likewise imbues the student nurse with a lifelong distaste for the subject of dietetics, both practical and theoretical, is a mystery. For example, I have recently heard of two university schools of nursing where it is obvious that the educational value of diet kitchen service either had not been appreciated, or if recognized, ignored. In one of these schools the student spent one week out of the eight weeks of diet service in polishing silver, while in the other school four weeks were given over to diet kitchen experience, of which two were devoted to formula making. I mention this because, in both instances, a wealth of clinical material, teaching atmosphere, a well equipped hospital and a proper quota of dietitians would have presented unusual possibilities for teaching dietetics.

The profession of dietetics is very young and you may not have had time to reach a full realization of the magnificent contribution your profession can make to the field of public health; nor have you come to realize perhaps the full measure of your responsibility to the preventive medicine program. This responsibility is a challenge indeed to your whole profession. As a group you are largely responsible for the nutrition program of the future; through your efforts will the food-heath gospel be spread. You should seek every agency that can transmit this message and the nurse is not the least of these agents. You as an individual may not work in a rural community, you may not become a nutritionist in a large urban health center, but you do teach student nurses. Think of the large army of students graduating from our schools of nursing each year, and of the opportunity that is yours to reach varying social groups through these nurses. You share indeed with the directors of nurses, with instructors of nursing, in a very real and definite way, the responsibility for the proper education of nurses in dietetics. I sincerely hope that you will see this responsibility and lend us your assistance and sympathetic coöperation in preparing the nurse of tomorrow more fully and adequately for the new duties that are hers in order that we may thus speed the coming of the new social order promised through the adoption of a universal program of preventive medicine and health education.

NITROGEN, CALCIUM, AND PHOSPHORUS BALANCES IN LATE GESTATION UNDER A SPECIFIED DIETARY RÉGIME*

A Record of One Case

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Every forward-looking mother has the desire and a right to raise a nutritionally stable child who will not be fettered by retarded physical development. Scientific evidence indicates that the campaign for the better nutrition of our children must have its inauguration with the mother herself during her reproductive cycle, i.e., during pregnancy and lactation. During the child-bearing period the fetus is wholly dependent on the maternal body for sustenance and for the rich or lean physical endowment with which it may begin an existence. Those elements that are not furnished for the developing embryo by the proper diet and nutrition of the mother are drawn from the maternal tissues and bony structure. During lactation both the mother and child are co-recipients of either the benefits derived from adequate maternal nutrition or the deleterious effects of unsatisfactory nutrition. After the nursing period the child becomes an independent entity in society and may or may not be influenced by ill-advised environmental factors, depending upon the adequacy of his nutritional endowment on the one hand, and upon the intensity of unfavorable influences on the other.

A mother deserves the best scientific advice and knowledge to aid her in fulfilling her uniquely important task of propagating healthy children, while at the same time enjoying her own well-being. Thus the best sources of science are needed to unravel the many facts relating to motherhood that are still uninterpreted, unrecognized, or unknown. Any recording of scientifically organized observations and facts relative

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to maternal, fetal and child welfare will be a boon to future mothers. In involved and complicated physiological conditions such as pregnancy and lactation, it will take many records on different individuals at varying stages of gestation; long, continuous records on single individuals with a consideration of the environment; and the sum total of effects upon the offspring itself before deserved scientific information can be adequately prescribed to a mother.

Since few metabolism studies involving human pregnancies have been recorded in the literature (1, 2, 3, 4, 5), it seemed desirable to report the following case study with a record of the utilization of nitrogen, calcium and phosphorus by a woman with first child. Ten-day observations were made at the seventh and eighth months of pregnancy, when the mother was maintained on a specified dietary régime. Analyses of blood and urine were made to determine alterations in composition concomitant with the progression of the gestation period. The subject was able to continue her usual physical and mental activities throughout the prenatal period, passed through an uneventful delivery, and was able in the lactation period to produce milk of sufficient quantity and of good enough quality to stimulate and maintain the growth and development of the infant at a satisfactory rate throughout the nursing period. It is only through the accumulation of such case histories that the fundamental knowledge of maternal well-being, upon which sound advice can be based and disseminated, can be acquired.

EXPERIMENTAL PROCEDURE

The subject, a student, was 36 years of age. Throughout the prenatal period she observed rules of proper hygiene and exercised daily in the fresh air and sunshine. Her activities as a student were continued during the experimental periods which came in the 7th and 8th months of pregnancy and were of 7 and 8 days in duration, preceded by 3-day preliminary periods.

The dietary consisted of the few simple foods listed in table 1, all of which were agreeable to the subject. Two of the authors (G and S) prepared the foods in an attractive and delectable form and in a variety of combinations as illustrated in table 2. The diet was rich in vitamins and adequate in roughage, as supplied by fresh fruits, vegetables, and whole wheat bread. The subject took large quantities (750 gm.) of orange juice daily, which Chaney (6) found to stimulate better calcium utilization.

The amounts of various food constituents were computed from acceptable figures (7, 8, 9,) (table 3) and considered to be adequate for this subject[1]

[1] Due to the presence of albuminuria, the subject's personal physician advised a low protein diet.

as to calories, protein, and minerals. Distilled water was taken *ad libitum.* An aliquot portion of each individual foodstuff eaten during the day was removed for analysis, and the accumulated daily aggregates formed the composites for the entire metabolic balance period. Complete 24-hour specimens of urine were collected and analyses were made on the fresh sample. The stools were marked at the beginning and end of each period with carmine. After the addition of dilute HCl and alcohol, both the foods and feces were dried over the water bath. When the samples were at constant weight they were pulverized and stored in glass jars for future analyses.

The following analytical methods were used. The total nitrogen was determined by the Kjeldahl method (10), the calcium of the foods, feces, and urine by a modification of the Clark (11) micro-procedure, and phosphorus by the Fiske and Subbarow (12) colorimetric technique. The amounts of urea,

TABLE 1

*Foods used in dietary during Period I**

FOOD	GRAMS PER DAY	FOOD	GRAMS PER DAY
Orange juice	750	Whole wheat bread	150
Apples	150	Oatmeal	100
Potato	150	Milk	900
String beans	100	Tenderloin	100
Tomato	100	Egg	50
Asparagus	125	Sugar	25
Apricot	150	Butter	25
Lettuce	100	Oil	25
		Lemon juice	10

* The same amounts were used in Period II, except that additions were made as follows: lettuce, 75 grams; sugar, 10 grams; butter, 30 grams; and oil, 15 grams.

ammonia, creatine, and creatinine were determined in the urine by Folin's colorimetric methods (13), and the uric acid according to Benedict and Franke (14). The Tisdall modification of the Kramer and Tisdall (15) method was used for the blood calcium, and Fiske and Subbarow's (12) method for the blood phosphorus.

EXPERIMENTAL DATA

The subject was storing nitrogen, calcium, and phosphorus in both the seventh and eighth months of pregnancy, as indicated by the presence of a greater content of these elements in the ingested food than in the metabolic end-products. The magnitude of the nitrogen storage was twenty-four and nineteen per cent, respectively, of the amounts ingested in Period I and Period II. In the eighth month forty-one per cent of the

TABLE 2

Representative menus constructed from the amounts and kinds of foodstuffs selected for consumption

TABLE 2

Representative menus constructed from the amounts and kinds of foodstuffs selected for consumption

BREAKFAST	LUNCH	DINNER
Orange Juice Oatmeal Toast Coffee Milk	Egg Omelet Buttered Tomatoes Asparagus Salad Bread Butter Apricot Sauce Milk	Broiled Steak Potato Puff String Beans in Cream Lettuce Salad Apple Sauce Milk
Orange Juice Oatmeal Toast Coffee Milk	Vegetable Soup Lettuce Salad Apricot and Apple Sauce Milk	Shepherd's Pie Fruit Salad Floating Island Milk
Orange Juice Oatmeal Toast Apple and Apricot Jam Coffee Milk	Potato Salad Buttered Beans Bread Butter Apricots Milk Orange Juice	Meat Loaf—Tomato Sauce Sautéd Asparagus Bread Butter Cornstarch Pudding with Apples and Apricots Milk Orange Juice
Orange Juice Oatmeal Toast Sautéd Egg Coffee Milk	Cream of Tomato Soup Asparagus on Toast Lettuce Salad Apricots	Tenderloin Steak Mashed Potatoes Buttered String Beans Apple Salad Orange Ice
Orange Juice Poached Egg Toast Apple and Apricot Jam Coffee Milk	Stew—(Meat, potatoes, tomatoes, beans, oatmeal) Lettuce Salad—Oil Dressing Bread and Butter Sandwich with Fruit Jam Milk	Cream of Potato Soup Meat Croquettes—Oatmeal Asparagus Salad Milk Orange Juice
Apricots Oatmeal Toast Milk Orange Juice	Breaded Meat Gravy Mashed Potatoes Vegetable Salad Beans, Tomato Bread Butter Apricots and Apples Milk	Creamed Asparagus on Toast Lettuce Salad Bread Butter Fruit Cup Milk Orange Juice

calcium ingested was retained, which was a storage nine per cent higher than that of the previous month. Phosphorus similarly was retained

TABLE 3

Computed dietary

	PERIOD I	PERIOD II	PERIOD I	PERIOD II
	Daily intake		Per kg. body weight*	Per kg. body weight†
	gm.	*gm.*		
Carbohydrate	328.5	288.3	5.4	4.5
Protein	84.0	79.0	1.4	1.2
Fat	105.0	98.6	1.7	1.5
Calcium	1.62	1.59	.027	.025
Phosphorus	1.83	1.73	.030	.027
Calories	2593.2	2353.6	42.9	36.6

* 60.5 kg.
† 64.4 kg.

TABLE 4

Average daily nitrogen, calcium, and phosphorus balances at the seventh and eighth months of pregnancy

PERIOD*	INTAKE	OUTGO		BALANCE		
		Urine	Fecal	Actual	Per kilo body weight	Utilization of intake
			Nitrogen			
	gm.	*gm.*	*gm.*	*gm.*	*gm.*	*per cent*
I	12.2	7.1	2.3	+2.9	+0.050	24
II	11.5	8.8	1.6	+2.2	+0.030	19
			Calcium			
I	1.93	0.16	1.15	+0.62	+0.010	32
II	1.55	0.04	0.87	+0.64	+0.010	41
			Phosphorus			
I	1.99	0.55	1.27	+0.17	+0.003	8
II	1.76	0.43	0.94	+0.39	+0.006	22

* Period I—7th month of pregnancy. Period II—8th month of pregnancy.

in greater amounts during Period II when there was a twenty-two per cent storage of the intake as compared with eight per cent in Period I. Serum calcium (11.7 and 10.4 mg. per 100 cc.) and phosphorus (2.7

and 3.6 mg. per 100 cc.) values were within the range established for the normal (16) and near the upper limit.

The diagnostic value of urine analyses has made for numerous records on the gravid individual. In the present case, on a constant protein intake of 12.2 grams of nitrogen daily in Period I, the total nitrogen excretion varied from 4.9 to 8.6 grams, with an average daily excretion of 7.1 grams. In Period II, when the intake was 11.5 grams, the range of the daily urinary excretion of nitrogen was between 7.2 and 10.0 grams, with an average of 8.8. Parallel fluctuations were observed in the urea excretion, which averaged eighty-three and seventy-nine per cent of the total nitrogen excretion in Periods I and II respectively. A slightly increased ammonia-N retention, equal to 0.8 grams daily, was observed during the eighth month, at which time the output was 0.215 grams. The creatinine coefficients (mg. of creatinine per kilogram of body weight) were 5.9 and 6.2; the figure established for the normal is 6.0 (17). Creatine was manifested during both periods. Speculations as to the source of this constituent during pregnancy, parturition and the onset of lactation are numerous, but lacking in consistence (18). Amino acid values were 3.0 and 1.5 per cent of the total nitrogen output during the first and second periods respectively; these values are at the lower level of averages recorded for the normal (19). Harding (20) states, "urine in normal pregnancy is identical with that of the non-gravid individual under similar conditions with the exception of the occurrence in it of creatine in the later stages of gestation."

CONCLUSION

The mother who was the subject of this observation experienced an uneventful prenatal period, terminated by a normal delivery, and followed by a lactation period during which a sufficient quantity of good quality milk was secreted to promote the satisfactory growth and development of the infant. During the seventh and eighth months of gestation, while consuming an apparently adequate diet and living under desirable environmental conditions, the subject was storing nitrogen, calcium, and phosphorus, and was showing no marked alteration from the normal in the constituents analyzed in the blood and urine.

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DIABETES MELLITUS AND THE CLINICIAN*

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Prior to the discovery of insulin in 1921–22, the diagnosis of diabetes mellitus was a most unhappy and regrettable occurrence for both clinician and patient. The former knew, in the large majority of instances, that he had before him a case he could never cure, that his best efforts were but a steady dietetic retreat which would end fatally, and the younger the patient, the more rapid would be the downward course. The patient was faced with an indefinite period of burdensome diabetic régime, while steadily losing ground and with the knowledge from the start that the fight could have only a fatal ending. For both clinician and patient, the task was discouraging and I say all honor is due to those who were sufficiently thoroughbred to struggle on against the odds until the discovery of insulin by Drs. Banting and Best completely changed this whole hopeless situation.

There is hardly any one who has not been affected to some extent by this discovery. The effect of insulin from the family, social and economic standpoint has been tremendous in the eight years of its use, and we are but on the threshold of its dividends. The amount of clinical observation on those patients saved by insulin has led us to be more and more optimistic about their future.

The more I see of diabetic work, the more convinced I am that we can not only keep alive the diabetic patient by diet, or diet and insulin, for a normal expectation of life, but that we can cure a certain percentage of our cases, and by cure I mean a normal diet, normal blood sugars, and urine sugar-free, but to achieve this we must have the constant coöperation and interest of all of the members who play a part in this diabetic treatment.

I like to think of the treatment of a diabetic patient as a coöperative company of eight different units. The success or failure of the whole depends upon the success or failure of each member of the company,

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and the dividends paid are in the health and well being of the patient, his ability once again to take his place as a useful working member of society, and his continuing influence upon an ever expanding circle of relatives, friends and acquaintances. The partners in this company as they appear are as follows:

1. The diabetic patient.
2. The diabetic consultant.
3. The dietitian.
4. The hospital nurses and housemen.
5. The laboratory technicians.
6. The social service workers.
7. The patient's family and friends.
8. The patient's family medical practitioner.

These eight independent units are mutually inter-related and contract together to return an invalid, a non-worker, back to society as a well, working unit—and to keep him well.

In our work we are so busy demolishing the tasks that pile ahead of us that we do not have time, the perspective, or the opportunity to see the success of the venture of which our tasks form a part. You as dietitians are so busy preparing trays and instructing patients that you do not see the tremendous success in the lives of the patients with whom you come in contact. You see the patient during the stage when he is made aglycosuric and trained how to remain sugar-free and with normal blood sugars after he departs hospital. As clinicians, I think we are remiss in not taking you more into our confidence so that you may see that these efforts with wearisome, everyday trays are producing wonderful improvement in the lives of your patients, and in some cases cures. It is with this idea in mind that I continue the clinical history of the patient that has been with you in hospital, and tell you of his progress after he returns home, and what we still hope to achieve for him.

The untreated diabetic is a patient who is suffering from a deficiency of insulin production or of insulin activity in his body. He is excreting carbohydrate instead of metabolizing it, and in the process, the system becomes laden with ketone bodies. The essential part of our treatment is to get the patient sugar-free with diet or diet plus insulin, to maintain the blood sugars within normal limits, and rest his pancreas. This entails teaching the patient a certain amount of dietetics, the use of insulin, and information which will permit him to live and work at home and carry on with some supervision and advice from time to time. In

the doing of this, we immediately encounter a number of individual factors, each of which is different in the various patients. We are often so busy in treating the disease that we forget that we are treating an individual who presents individual problems and requires individual solutions for each of them.

Diabetes is no respector of class or distinction. Our patients are from all walks of life, rich and poor, educated and illiterate, English speaking and foreign. Five of the best patients I have had have been Chinese, who could not speak or understand English, and yet these five by means of an interpreter were balanced on diet and insulin and made satisfactory progress when they returned to their homes. One of the interesting problems in these cases was to learn what the Chinese ate and to fit our diabetic requirements into a normal Chinese diet. We should have failed utterly in our diabetic treatment if we had tried to force a European régime upon these understanding but conservative Asiatics.

A large number of our patients both in hospital and private practice are Hebrews, and here again we often have recourse to the use of an interpreter, either a professional one or a friend of the patient. Here too, we encounter religious laws and restrictions in the extremely orthodox, and we have to modify our diets to suit the religious beliefs and stand adamant when these beliefs run counter to a proper supervision of the patient's health and diet. May I say here that no religion or belief of which I know insists upon a patient's sacrificing his health and well being, in order to obey the laws that are ordinarily laid down for the guidance of the healthy normal individual.

Other problems which will exercise your ingenuity and strain your patience are those instances when diabetes is complicated with deafness, blindness, mutism, and perhaps one might also add pregnancy. There is also the unhappy individual who can neither read nor write, whose arithmetic is limited to dollars and cents, usually of the minus quantity, and whose mind is stored with a weird assortment of popular misbeliefs and conceptions gained from friendly advice propagated by vendors of patent medicines. All these problems will vex and irritate you, they will tax your ingenuity and your patience, and yet to have exercised tact and perseverance and achieved results is certain to give you a glow of pleasure as well as that inestimable privilege of the confidence and trust of a fellow human being. We may laugh about their weird ideas and we may exercise profanity at their stupidity, but if we show either to the patients, we shall forever have lost their faith and coöperation and away goes our chance of treating their diabetes.

In order intelligently to treat and advise your patients, you must know their financial position and their home environment. There is no sense in placing bacon and eggs on diabetic's diets when the financial position makes it impossible to obtain these articles. We are also faced with the problem of the diabetic who eats away from home for one or more meals a day and we are forced to alter and reconstruct diets for week days as well as Sundays and holidays. There is the washer woman who eats at a different house five or six days a week. There is the clerk or stenographer who has to take a portable diabetic lunch and possibly take a noon dose of insulin. A large number of cafeterias in Toronto fortunately are under the supervision of a trained dietitian and weighed diets are becoming more easily and economically obtained.

Hospital diets may be as varied and elaborate as the institution permits. The patient's diet on discharge, however, must be one that will fit into the menus of the remainder of the family, with the minimum of trouble. Place yourself in the position of the diabetic mother of seven or eight husky, troublesome children and see how you would like to cook a five per cent and a ten per cent vegetable at noon and night when your husband is earning a minimum living wage. Figure out, too, how you would have time to thrice-cook vegetables and how much time you would have to relish them after draining them three times and smelling them all the time.

In some of our hospitals the dietitians never see their patients and the names of the patients conjure up only a tray with certain figures of carbohydrate, protein and fat, and a certain daily caloric intake. They never learn until the patient comes for instruction on discharge that this patient loathes spinach and loves tomatoes. They miss half of the joy of their work by not seeing the patient daily, noting his improvement in health, checking up on his likes and dislikes, and incidently freeing the clinician of a long list of daily dietary complaints.

In order to solve these difficulties which have arisen, we have tried out the diet form shown on page 325. These forms are arranged so that the patient can easily follow, in reading from meals to items of diet. They are made up for the patient, but the dietitians follow chronologically each step as the diet is made. First of all, there are carbohydrate containing foods, then the protein foods, and lastly the fatty foods. The total of each is reckoned, and lastly the food values and calories are entered. A space is left opposite each meal for insulin dosage.

All the vegetables were prescribed as five per cent, and the patient is taught how to take half the weight when changing to ten per cent vege-

tables. Similarly, the fruits are all given as ten per cent fruit, and the patient is instructed how to alter to five, fifteen, or twenty per cent fruits. On the reverse side is a list of five, ten, fifteen, and twenty per cent vegetables and fruits, and above each column is a space in which the dietitian enters the corresponding values of each. This saves the patients any unnecessary or bewildering division or multiplication. They have only to find the desired vegetable or fruit on the list, and the amount allowed

DEPARTMENT OF PENSIONS AND NATIONAL HEALTH

For

Reg. No. Date

FOOD	Breakfast	Dinner	Supper	Total Grams	Carbohydrate	Protein	Fat
5% Veg. Cooked							
10% Fruit							
Oatmeal							
Corn Flakes							
Shredded Wheat							
Muffin							
Cream							
Eggs							
Bacon							
Meat							
Cheese							
Butter							
Insulin				Grams			
				Calories	4	4	9
Total Calories							

P. & N.H. 57—5m—9-28—Req. 2581.

Approximate Carbohydrate Content of Vegetables and Fruits

5 Per Cent		10 Per Cent		15 Per Cent		20 Per Cent		Non-Nutrients
Vegetables Fruit	gms. gms.	Vegetables Fruit	gms. gms.	Vegetables Fruit	gms. gms.	Vegetables Fruit	gms. gms.	Clear Broth • Clear Coffee Clear Cocoa or Cracked Cocoa Shell Pepper Vinegar Mustard Spices Agar Agar Gelatin (G) Fruit Rind Cellu Flour Cellulose Washed Bran Lister Fiber Celery flour Mineral Oil Magnesia
Asparagus		Beets		Artichoke		Beans, Lima, dried		
Bean Sprouts		Carrots		Beans, green, fresh		Beans, Lima, boiled		
Beet Greens		Kohl Rabi		Peas, green, fresh		Macaroni, boiled		
Broccoli Sprouts		Onion		Beans, Lima, canned		Nuts, boiled		
Cabbage		Peas, Canned				Beans, white		
Cauliflower		Pumpkin				Beans, baked		
Cucumber		Rutabaga						
Dandelion Greens		Turnips						
Egg Plant				Fruits				
Endive •				Apples				
Lettuce				Apricots, fresh		Fruits		
Marrow		Fruits		Bananas				
Mushrooms		Blackberries		Cherries, fresh		Plums		
Peppers, Green		Cranberries		Huckleberries				
Radishes		Gooseberries		Pears				
Rhubarb		Loganberries		Raspberries				
Sauerkraut		Muskmelon						
Soy Beans		Oranges				English Walnuts		
Spinach		Pineapple				Almonds		
Sorrel		Prunes						
Swiss Chard		Strawberries		Hickory Nuts				
Tomatoes		Watermelon		Black Walnuts				
Water Cress		Olives, Green		Filberts		25 Per Cent		
Gluten Meal (30% Fat)		(20% Fat)		Butternuts		Peanuts		
Butternuts		Bread Nuts		Pecans				

is already worked out for them. The articles on the diet list are the fundamentals, and the patient is shown how to combine cream and vegetable for soup, or egg and cream for custard, or fruit and cream for ice cream. It will simplify the work if the patient has his own cream pitcher and butter dish, weighs out his whole day's ration of these articles at breakfast, and apportions them approximately at each meal during the day.

This simple diet form was tried successfully in the following case, a patient in comparatively well-to-do circumstances that deliberately stopped a former complicated diabetic régime because he could not keep a maid. The requirements of frying meats and eggs separately in mineral oil, and the necessity of altering butter and cream rations to compensate for various meats, fish and fowl, were so time-consuming and irksome that he was faced with the alternatives of getting a second maid to handle his diet, or giving up his treatment, and he chose the latter.

We now come to the unsettled problem of what is the best proportion of carbohydrate, protein and fat. With regard to carbohydrate, it is better to give a patient one hundred grams of carbohydrate in his diet, if he will stick to it, than to give him a diet of forty or fifty grams to which he will not adhere. Scientifically, two-thirds of a gram of protein per kilogram of body weight may be sufficient for the replacement of the body tissue of a patient in hospital, but if he is to lead an active life, and have any joy in the living of it, he requires a gram of protein per kilogram of body weight.

With regard to fat, many a patient who has nothing wrong with his gall bladder, cannot tolerate more than 170 grams of fat daily for 365 days in the year without getting nauseated, losing his appetite, and developing an oily skin, with acne eruptions. The argument in favour of fats is the low available carbohydrate content of ten per cent. More recent work will probably show that much higher values than ten per cent must be utilizable by the human metabolism. Furthermore, in a series of more than two hundred diabetic patients, it was discovered that fifty-seven per cent of these had, as a complication and probable etiological factor for their diabetes, gall bladder disease, with or without gall stones. Why then should we give half of our diabetics indigestion and bilious attacks and produce vomiting and acidosis from high fat diets?

I use eighty to one hundred grams of carbohydrate, a gram or more of protein per kilogram of body weight, and sufficient fat to make the caloric intake about thirty calories per kilogram of body weight. This rule is an elastic one, which is varied with the patient's age, occupation, and particularly his progress.

After the patient departs hospital, a period of close observation when he is on his own responsibility will reveal frequent errors in his diet, in the taking of his insulin, and other mistakes that surprise and sometimes amuse you. Sometimes all our work is brought to nought by the suggestions of some well meaning, but ignorant relative or friend who persuades the patient that certain bread stuffs or diabetic nostrums will relieve him of the necessity of weighing his food.

Sometimes the upset is caused by the family physician as in the following case: The patient, a farmer with diabetic gangrene of one leg, was referred by his physician, who was sufficiently enlightened to appreciate that without a dietitian to control the diet it was impossible, in the local hospital, successfully to amputate the leg. The patient became sugar-free on diet and insulin, and a successful amputation was performed. During his convalescence, his wife came to Toronto, and soon was trained to handle his diabetic diet, and to administer insulin. On his return home, a report embodying his diet and insulin requirements was forwarded to the local medical practitioner, who had so wisely referred the case in the first place. Included in this report was a statement that the circulation of the remaining foot was markedly impaired, and that any deviation by the patient from the path of normal blood sugars, would probably terminate in gangrene and loss of the remaining leg. On viewing the diet list, with its bran muffins, the doctor informed the patient that these were not necessary, and that he could substitute any amount of bread, dried in the oven, in their place. A private communication from his wife advised that this had caused the return of a marked glycosuria, and the doctor was written to once, and the patient twice, warning them of what would happen. One year to the month, this patient returned with a diabetic gangrene of the other leg, which was successfully amputated, but he succumbed on the fifth day to an embolus dislodged from the site of operation.

I think that all but very mild cases should weigh their food and keep weighing it. Patients say they can guess the weight, after weighing for a while, and so they can, but after a lapse of a month or two months of non-weighing, their ideas of food weights will be distinctly hazy.

Having achieved complete coöperation and eliminated errors, how often should we see our cases and why? For both clinic and private cases, we aim at once a month and achieve at least every six weeks, oftener if the patient notices a return of the glycosuria. A twenty-four-hour urine sample is obtained the day before seeing the patient, and then, with the record of insulin and the patient's weight, you can intelligently advise and alter the treatment. This practically ensures that the patient does not fall into serious difficulties between periods of observation. The assurance to the patient that he is progressing favorably and the settling of any of his difficulties encourages him to coöperate to the utmost. The use of the social service and the limiting of insulin issues to a month's supply further ensure the return of the diabetic.

Thanks to insulin, we have had eight years of clinical observation of

diabetics who would otherwise have died, and from this observation we have learned many things. We have noted that the diabetic condition varies with certain clinical factors and improves when these complications were eliminated.

If we are ever to cure the disease, we must know the cause. The etiological factors are varied, but easily discoverable if we search diligently. More than one cause may be present in the same patient. Having diagnosed the cause, and having treated it, as well as the disease, can we be accused of being too optimistic for thinking that a large number of our cases can be cured, particularly those who come early and become sugar-free before permanent damage is done to the islet cells of Langerhans?.

The etiological factors of diabetes mellitus are as follows: a hereditary defect of the pancreatic islet tissue; arteriosclerosis; endocrine gland disturbance; dietary excesses and obesity; cranial injuries; focal infection.

There is undoubtedly a familial, as well as a conjugal incidence of diabetes. This may be due to a hereditary factor or defect, but probably is due to the similar mode of living and eating of various members of the same family. We all know of families who eat extraordinary amounts of carbohydrate, whose members are all overweight, and who exercise inadequately. This fact, combined with the facilities for contracting the same infections, is the probable explanation of the majority of these familial cases of diabetes, rather than a hereditary tendency. A large number of the patients who have been under our care since the discovery of insulin in 1922 now have families, and in no instance has it been discovered that the second generation has developed this disease. A defect of pancreatic islet tissue is a possibility, but a very rare and minor factor in the etiology of diabetes mellitus.

Arteriosclerosis is undoubtedly a large factor in the older diabetic, and here the disease is insidious in onset, but usually of mild degree and easily controlled by diet without the use of insulin. Associated with the arteriosclerosis is often some impairment of kidney function, and when this has been determined and corrected, the patients can readily carry on with very little disability. This type, however, in view of the permanency of the atheromatous changes, is not as likely to give rise to a great percentage of cures, and carelessness on the patient's part with regard to diet usually terminates, not in diabetic coma, but in diabetic gangrene and infection.

As our knowledge of the endocrine glands has grown we have learned of their interrelationship. As safety valves upon insulin activity, we

have the secretions of the thyroid and suprarenal glands, hence the necessity for the routine examination of the basal metabolic rate in all diabetic patients. Thus we eliminate the chance of overlooking a mild hyperthyroid condition.

We are still hoping for an adequate and reliable test for adrenal function. Those available at present are dependent upon so many variable factors that their reliability is open to grave doubt. Undoubtedly, the suprarenal gland is a safety valve upon carbohydrate metabolism, as evidenced by the hyperglycaemic rise of the blood following the injection of adrenalin, and the pupillary dilatation caused by the sympathetic stimulation in marked hypoglycaemia.

The pituitary gland also exercises a controlling hand upon sugar metabolism. In hypopituitarism there is increased sugar tolerance; in hyperpituitarism there is a decreased sugar tolerance with increased urinary output.

Dietary excesses, and consequent obesity, are often a precursor of diabetes mellitus. Between one and two per cent of the American population are afflicted with this disease, and this undoubtedly is due to the fact that the per capita consumption of sugar in the United States in pre-Volstead days was five times greater than that of Great Britain, and greater still since the passing of the Volstead Act. The incidence of diabetes among overweight people is immeasurably greater than among people who are of normal weight, or under.

The increasing use of motor cars, which provide fresh air and keen appetites, without the necessity of physical exercise, is also a contributing cause for obesity, and later, either arteriosclerosis, diabetes, or both. One has only to gaze in awe at the prodigious meals consumed by our summer motorists to cease wondering that only one or two per cent of them have a true glycosuria. This type of diabetes is usually mild, and, with proper weight reduction, and dietary supervision, the patient soon regains a normal carbohydrate tolerance.

Cranial injuries and disease of the pancreatic gland may produce a true glycosuria, but these are rare factors.

One of the largest etiological factors in the production of diabetes is focal infection. This must be searched for in teeth, tonsils, accessory sinuses, genito-urinary tract, and digestive system. Such infections occur particularly in the younger adult and children. English investigators, namely, Lawrence, Buckley, Evans and Zeckwer, have published in the last few years the results of their investigations on the effect of focal infections and toxaemias on carbohydrate metabolism. They

found that these agents stimulated the thyroid and suprarenal glands, and that their over-activity made diabetes worse and prevented the usual action of insulin. Control work on non-diabetic human beings brought out the fact that carbohydrate metabolism was also lowered by these same toxic and infective agents. This work has given us a physiological explanation of the well known clinical fact that insulin, both endogenous and exogenous, is more or less inactive in the presence of infection. Furthermore, this effect is present in non-diabetic animals and human beings.

Having treated the disease and the etiological factor or factors behind it to the best of our ability, we by our frequent observation gradually eliminate the use of insulin, and then slowly raise the carbohydrate intake when the clinical conditions tell us that the pancreas can handle this increase. I think it is just as important to make the pancreas do as much work as possible, as it is not to place it under strain.

The following two case reports will serve to demonstrate what can be done by treating the etiological factor as well as the disease.

CASE 1

Case 1 came under observation in January, 1927, with a history of polyuria, polydipsia and polyphagia, of two months' duration, and a loss of twelve pounds during that period of time. His age was sixty years, height seventy-one inches, weight 254 pounds. His normal weight was 175 pounds. The urinalysis was as follows: acetone 3 plus; sugar 8.5 per cent (275 grams). He gave a history of being jaundiced as a child. Blood pressure was 185 systolic, 110 diastolic. He became aglycosuric on a diet of carbohydrate 68, protein 84, fat 150. The etiological factors in this case were obesity, chronic cholecystitis (confirmed by radiological methods), and slight arteriosclerosis with hypertension. In three years' time, with careful coöperation of the patient with regard to weighing his food, the patient is now handling a diet of carbohydrate 320, protein 100, and fat 130, calories 2850, and is constantly aglycosuric and with normal blood sugars. His weight has been reduced to 215 pounds, and his blood pressure to 140 mm. systolic, and 80 mm. diastolic. This patient is now doing twice as much work as formerly, as executive head of one of our large business concerns.

CASE 2

Case 2 was a lad of sixteen years, who was admitted to the public wards of the Toronto Western Hospital in September, 1927, for tonsillectomy.

It was found that he had a glycosuria of the true diabetic type, and he became sugar-free and with normal blood sugars on a diet of carbohydrate 125, protein 60, fats 125, without the necessity of insulin. Tonsillectomy and submucous resection were performed, and during his uneventful convalescence, it was discovered by intravenous iodekon cholecystography that he had as a second infective etiological factor, chronic cholecystitis. He, too, has been a most coöperative patient, and with the eradication of his upper respiratory tract infection, in one year and a half, returned to a diet of carbohydrate 240, protein 70, fat 120. A re-check of his gall bladder, using iodekon orally, has shown a greater concentration of this salt than on the previous examination, although the radiographic picture is not yet quite up to normal. During the last year and a half this patient has been on an absolutely unrestricted diet and still returns sugar-free, with normal blood sugars, and with normal blood sugar curve after the ingestion of 100 grams of glucose.

Not all our diabetics are making as happy or as speedy a recovery to a normal diet as the two cases reported, but the treatment of the etiological factors is progressing and when we bear in mind that in animals seven-eighths of the gland may be removed without producing glycosuria, and remember the microscopic as well as clinical evidence of regeneration of the pancreas, can we be accused of being too optimistic in hoping that we are on the threshold of an era when we can cure or markedly improve a large percentage of our patients suffering from this disease?

Furthermore, in our non-diabetic patients, if we diagnose early and treat their arteriosclerosis, correct the malfunctioning of the ductless glands, particularly hyperthyroidism, eliminate obesity and over-eating, ease the mental strain of the over-ambitious, and eradicate all focal infection, then surely we can also hope to prevent the onset of diabetes, and instead of a steadily increasing incidence of this disease, we shall find a progressive diminution.

This is the clinical story of diabetes as I see it following the discovery of insulin. As dietitians, you are playing a large part in the battle, and your routine round of weighed diets, your faithful instruction of the patients, is enabling them to carry on life comfortably and enjoyably. You have another duty in instructing the non-diabetic population how to avoid this disease, and I congratulate you on what you have already achieved, and ask you not to think of your work as a daily task, but as part of a glorious achievement which is felt the world over.

LEGAL AND ECONOMIC PHASES OF PURCHASING*

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The activities of the purchasing agent have become so broad and diversified that he must seek assistance from scientists and other experts. When he wants information concerning the quality of the motor oil he is buying, he asks the chemistry department to make a chemical analysis. When he wishes to determine the quality of the peaches he is buying he looks to the dietetics department for assistance. He realizes his dependence on the help of these other departments, and as he develops skill and scientific purchasing knowledge he will be of increasing help to these other fields of endeavor.

I want to correct two common erroneous assumptions concerning purchasing. The first is the belief that there is a well known and well defined "purchasing problem" which a purchasing agent must constantly face. This so-called "purchasing problem" quickly disappears if the buyer treats all vendors ethically and with absolute fairness, and deals with the people for whom he buys in such a manner that they will come to feel he is at all times endeavoring to safeguard their interests. In addition he must have training, knowledge, and ability to insure a high degree of competency.

The second erroneous belief is that the purchasing agent can perform magic in the way of effecting tremendous savings. Results come from ability, training, energy, common sense and conditions that make for success. In the commercial field it is a well conceded fact that there is a reduction in the purchase price of ten per cent due to centralized purchasing of large quantities of standardized articles. Scientific purchasing methods yield a profit of five to ten per cent on the total purchase budget. These profits are obtained through quantity buying, standardization, buying at correct time and at right prices. Effective buying is not the result of placing the emphasis on the amount of money saved, but consists in procuring the most suitable commodity in the most satisfactory manner. Then and then only will the savings become actual and real.

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Every buyer should know what limitations are placed on the purchasing by legal enactment or governing board resolutions. These limitations should be clearly written out and easily accessible. If necessary, competent legal assistance should be secured to study and analyze the limitations and brief them into handbook form. A knowledge of your legal and basic background inspires confidence on the part of the vendors and the people for whom you are buying. It almost goes without saying that a buyer is stupid who is content to rest on his legal requirements and does not secure for his institution the added dividends of good will due to first class ethical dealing and fair play with all vendors.

In addition to any possible legal limitations, there are certain legal implications connected with buying to which the buyer should be ever sensitive. I will enumerate only a few of the most common ones:[1]

Warranty of quality: With each transfer of goods by sale there is conveyed to the purchaser by the vendor an implied warranty of quality, usually against defects in workmanship or materials for one year.

Warranty of suitability: The warranty of suitability is implied, that is, suitability for certain purposes.

Warranty of adaptability: The warranty of adaptability must be specific, and must be a clear statement of performance required, in that it fixes the limits of service required.

Use of buyers' specifications: Goods manufactured to the purchasers' specifications are not subjected to a warranty of quality or suitability so long as they conform to such specifications.

Time of delivery: Failure to deliver goods on specified time constitutes a breach of contract by the vendor and the contract may be cancelled at the option of the purchaser.

Rejection of poor quality: The right to reject due to lack of quality or due to unsuitability is assured the purchaser and need not be specifically reserved.

The buying should be on the informal basis of "asking for quotations of current prices," unless required by legal enactment to ask for bids. When you "ask for bids," your action becomes more formal and carries the implied conception of a public opening at a specified time, with the acceptance on your part of the lowest bid. By asking for bids it places the action on a formal and legal basis much earlier in the transaction than is the case when you request quotations. The bidder is bound to

[1] The Purchasing Agent, 18: 512 (May) 1929

complete his part of the bargain if the biddee accepts the offer in a reasonable time. If you ask for quotations, the vendor is merely naming the current prices which may change at any time and the quotations do not become binding on either party until an order has been placed and accepted.

Frequently the question of the necessity of supplying the unsuccessful vendors with a copy of the prices quoted arises. In the absence of any legal requirements, one of two policies should govern your action. You are justified in giving all the vendor's quoting a copy of the prices quoted when such publicity action will secure the goodwill of the vendors and establish a feeling on their part that everyone was treated impartially and ethically. You are not justified in giving a copy of prices quoted to any vendor when such publicity information will merely serve as a deadline below which a vendor must scale his quotation in order to be successful. Business secured in this manner does not represent service for fair consideration, but is secured by a breach of confidence. In addition, you should always observe three ethical practices: First, never make public any prices until the final decision has been made; second, do not permit an unsuccessful vendor to requote merely for the sake of scaling his price down to a point that will secure the award for him; third, if the prices quoted are made public, make all quotations available to all vendors who quoted on this commodity.

In purchasing, the most important question is "what to buy." To be sure, we know the name of the commodity we want to buy, such as beef, eggs, potatoes, but there are certain fundamental decisions to be made which will have a considerable bearing on the final cost. There are five classes of beef animals with some seven grades for each class. Merely to ask for a hind quarter of beef is not very definite. To illustrate: There are five classes of beef animals. Steers constitute about forty-four per cent of these five classes. Hence there is a larger selection from the steer class than from any one of the other four. Decision 1 will be the use of steer beef. Generally speaking, less than two per cent of the steers will grade Prime and Choice, twenty-six per cent will grade Good No. 2 and sixty-six per cent will grade Medium. Decision 2, in order to insure a good quality of beef, will call for Good No. 2 quality.

For quality decisions, the buyer must necessarily be governed by the policies of his institution, plus his judgment of values. That is, will a greater price per unit secure a quality which will pay sufficient returns, in the way of added benefits to his department, to justify the greater price? Or will a cheaper quality serve equally well, without added cost due to

waste, added labor and dissatisfaction? The buyer must always be sensitive to the operation of the law of diminishing returns.

About seventy-five per cent of the steers slaughtered will weigh from 900 to 1000 pounds. Decision 3, will be to use carcasses that can be secured from animals in that weight group, thus affording greater selection.

The foregoing decisions serve as an excellent basis for intelligent and workable specifications The effective buyer is constantly building definite and simple specifications, because they must be kept just as modern as the commodity he is buying, and with our rapidly changing commodities, yesterday's specifications may be obsolete today. Carefully drawn specifications force the buyer to make definite decisions as to quality, size and type. He will be in a position to ask his sources of supply to quote on like commodities and to render similar service. He will be able to make accurate comparison of their quotations. Definite specifications serve as a means of informing the people for whom you are buying as to the quality, size and type they should receive and pay for. Carefully drawn specifications tend to spike the guns of the unscrupulous vendor, leaving him no excuse for poor quality or inferior service.

Most buyers are reasonably definite in specifying the quality they want, but leave the type of service to be rendered to the vendors. In asking a firm to make a quotation, the vendor should be informed of the quality and quantity of service he is to render, as well as the quantity and quality of merchandise he is to deliver. The frequency of delivery, place and size of delivery, accuracy and method of billing, and promptness of making payments should all be a part of the specifications and should be clearly and definitely stated. This service is an essential part of the purchase. If the bookkeeping of the vendor is inaccurate and delayed so as to involve a great deal of added clerical labor and annoyance for the buying institution, it increases the cost of the commodity. I shall enumerate some of the more common actions which if well executed will do much to safeguard the interests of the institution for which the buyer is responsible.

First: In building a purchasing program, the contracts must not represent a gambling proposition. In asking for quotations and drawing up a contract, the extent of time must be governed by the character of the commodity. The price fluctuation on cereals is slight, while that on fresh fruits and vegetables is rapid and violent. It is feasible to make a three months' contract with price decline protection on the former, while a week is about the maximum length of time for which it is practicable

to make a quotation on the latter commodity. Care must be exercised to avoid asking a vendor to quote on requirements which may represent a gamble to him, for he will have a tendency either to quote sufficiently high in order to protect himself against a possible loss due to uncertain elements, or he will take a chance and if caught by a violent price increase will skimp the service or quality.

Second: In asking for protection against price decline prior to delivery, it may be necessary and expedient in the case of certain commodities to draw a contract that will take into consideration a price increase as well as the possibility of a price decline. We cannot expect to buy at a much lower figure than the current market level, except for certain commodities that lend themselves to large quantity buying. Of course, in some instances a shrewd buyer will anticipate a rising market, but probably, when storage and carrying charges are included, his buying over a period of time will closely parallel the current market levels. In buying commodities such as canned fruits, vegetables and potatoes for winter use, the price paid should be considerably lower than the current market price, as there are added costs due to storage, depreciation, shrinkage, spoilage, pilfering, fire hazards and many other costs that we too often neglect to include.

Third: Definite standards of quality in all specifications asking for quotations—90 score butter, Good No. 2 beef—should be used. Definite specifications are insufficient; it is necessary in addition to make provision for inspection at the time of delivery and to provide for frequent scoring by expert commercial agencies so as to insure uniformity of quality.

Fourth: one must insist on receiving the quantity and quality of service which was asked for in the request for quotations. Any tendency on the part of the vendor to skimp the quality or quantity of service should eliminate him from the possible source of supply.

Fifth: The institution should be protected against unreliable and incompetent vendors. The buyer who spends his time and energy endeavoring to bear with a grossly incompetent vendor is robbing his own institution of the time that rightfully belongs to them. Errors that are clearly the vendor's fault should be rectified by him at his expense. The buyer's responsibility and loyalty is to the institution for which he is buying, and not to some high pressure salesman who endeavors to place the business on a personal friendship basis.

In determining the proper price to pay for a commodity, two things must be kept in mind: First, over a period of time it will be necessary to

pay prices closely paralleling the current market price. I do not necessarily mean retail or wholesale prices, but the institution price. Second, one cannot and should not attempt to buy on a basis that does not leave a fair profit to the vendor. Placing the buying on a competitive quotation basis, with the attendant opportunity to shop around, will have a tendency to do away with incompetent vendors and eliminate those having too expensive an overhead. Due to large volume, ability to program the ordering, and regular requirements, the institution is placed in the position of a large user. In addition, there is no need for sales, advertising and collection effort to handle the institution's business. Hence one should not pay any considerable amount for these unused services. The competent and alert buyer will constantly analyze the practices of his institution and be in a position to insist on receiving the benefits due to high type administrative practices. About fifty-five per cent of the week's grocery business falls on Friday and Saturday. Placing the orders so as to have deliveries made other days than Friday or Saturday, makes it possible for your vendor to handle this added business with his present overhead and without added expense.

Programming the ordering so as to permit large quantity deliveries at any one time, rather than delivering on a hit or miss basis as needed, will not only reduce the clerical cost to the user but it will reduce the vendor's billing and delivery expense. It is necessary to add about seven per cent to the value of the order to deliver the goods. It costs on the average ten cents per delivered mile. Almost as much time is required to write up, issue, deliver and bill a one-case order as a twenty-case order.

Using standard stock or commercial run of merchandise where possible will decrease the cost, as the manufacturing, processing, and handling costs are reduced. A recent investigation revealed that of the ten best known brands of peas over eighty per cent of the sales were made from four brands.

Organizing your accounting procedure to insure prompt payment of all vouchers without any collection effort on the part of the vendor will make your business highly desirable and permit the vendor to handle it on a closer margin. Many firms will discount their bills two per cent for payment within ten days, charging such a reduction to collection efforts.

The dietitian has a difficult problem, since the buying of food commodities is more complex than the buying of equipment or furniture. In buying steel shelving, the gage of uprights, of shelves, and of backs can be definitely specified. The deflection limits of the shelves and the shearing strain of the bolts can be clearly stated. All specifications can be

accurately checked by the buyer with well known and easily used measuring instruments. In the case of food commodities, perhaps the fact that everyone sees and uses foods leads the buyer to evaluate the quality, but his evaluation usually does not carry with it knowledge of well known standards of quality, and certainly it is not possible for him to make use of accurate instruments to verify his quality evaluation. The determination of the quality of many foods is, at least in part, the personal judgment of the so-called expert and, in part, a complex analysis. To evaluate accurately the quality of food commodities calls for a broad knowledge of the sources of supply, a knowledge of the forms of processing and a knowledge of the types, sizes and qualities.

In conclusion, skilful buying activities will result in dividends to your institution. These dividends are numerous, diversified, oftentimes unrecognized and difficult to measure. Unfortunately we have been applying the easiest measuring instrument, the amount of money saved, to demonstrate our success. We should also evaluate the element of goodwill and that of respect for highly efficient executive procedure. We should not lose sight of the value to the institution of having the buying administered by a competent, technically trained individual, possessing good business judgment. Whether this individual is a dietitian or a purchasing agent is immaterial. What really matters is that he or she should have sufficient knowledge and training to administer the business of buying to the mutual benefit of all concerned.

MALTED MILK*

JAMES A. TOBEY, DR.P.H.

Malted milk has been an accepted article of commerce for nearly half a century. This powdered product resulting from the processing of a combination of barley malt, wheat flour, and milk, was, in fact, the first form of dried milk to achieve commercial success. Ever since its invention in 1883 and its appearance on the market a few years later, malted milk has been steadily gaining in popular favor. Today its annual production in the United States exceeds 22,000,000 pounds.

Everyone is familiar with this savory food product, but few are intimate with its method of manufacture, its composition, or its nutritional qualities. In view of the widespread popularity of malted milk and its long history, it is surprising how little of a scientific nature has ever been written about it. Although there are hundreds of references to the other forms of concentrated milk, such as the condensed, evaporated, and dried milks, and literally thousands on milk itself, barely a dozen authoritative articles have been written about malted milk.

HISTORY AND DEVELOPMENT

The process for making "malted" foods apparently originated with Liebig, the German chemist, who perfected such a product in 1866. About fifteen years later the American manufacturer of a somewhat similar baby food was approached by a group of physicians who complained of their inability to secure pure, wholesome milk for babies, and suggested that a dried mixture of milk and cereal grains be manufactured. The result, after several years of experimentation, was "a granulated food for infants," patented in 1883. It was placed on the market in 1887 as "malted milk" and almost immediately attained a considerable vogue.

Other manufacturers soon entered this field, so that by 1916 more than 11,000,000 pounds were made annually. Although the originator of the process endeavored to prohibit the use of the term "malted milk" by others, courts of last resort in England and in the United States held that no one concern had an exclusive right to these words. During the past

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thirty years, only four or five large companies have been producing malted milk, although many have been putting out imitations.

Government regulations promulgated under the terms of the Federal Food and Drugs Act of 1906 now restrict the use of words "malted milk" to products which are actually malt-flour infusions processed with milk and evaporated to dryness. Mixing dried cereals with milk powder and flavoring material does not constitute malted milk, nor can such products be so labelled, but must be distinguished by trade names. *Caveat emptor!*

THE PROCESS OF MANUFACTURE

Malted milk is defined by the United States Department of Agriculture as "the product made by combining whole milk with the liquid separated from a mash of ground barley malt and wheat flour, with or without the addition of sodium chloride, sodium bicarbonate, and potassium bicarbonate in such a manner as to secure the full enzymic action of the malt extract and by removing water. The resulting product contains not less than seven and one-half per cent of butter fat and not more than three and one-half per cent of moisture."

The process begins with the preparation of the barley malt. The barley selected must be mellow, uniform in hardness, and it must be thoroughly rid of any impurities. The grain is aged in order to induce it to grow a sprout, or acrospire, with resulting development of enzymes which will convert starches and proteins. When germination is complete, the barley is placed in kilns and dried for three or four days.

This prepared barley malt is mixed with wheat flour and run through a malt crusher, which breaks the malt berry and pulverizes the kernel without pulverizing the hull. Pure water is then added and the mixture is heated to 150°F. for three quarters of an hour. The enzymes go into action and convert the starch present into maltose and dextrine. After the mash has been passed through coarse sieves to remove any hulls remaining, sufficient fresh whole milk is added so that the finished product will have from twenty-five to twenty-seven per cent milk solids.

This mixture is next concentrated in huge vacuum pans at a temperature of approximately 125°F. After remaining in the vacuum pans for an hour or so, and in storage outside of them for another twenty minutes, the drying is completed in smaller vacuum pans or on drums. The vacuum pan drying requires from two to three hours at a relatively low temperature, but the drum accomplishes more or less complete drying in about ten seconds. The finished product from the pans, resembling

a petrified sponge in appearance, or the powder from the drums, is sifted and ground and packed in tin or glass containers for the market.

Chocolate malted milk, or more properly, chocolate flavor malted milk, is made in the same way, except that cocoa powder, boiled to hydrolyze the starch, is added at the same time as is the whole milk. When the final product is ground, a little vanilla flavor and pulverized sugar are also added. In some products the cocoa is not cooked, but added as a powder. As in the case of plain malted milk, the term "chocolate flavor malted milk" can be used only for those products which are actually malted milk as defined above.

COMPOSITION

The average composition of plain malted milk is as follows:

Fat	9.2
Protein	15.5
Lactose and Maltose	49.1
Dextrin	20.2
Ash	3.8
Moisture	2.2
	100.0

Most of the fat is butter-fat. Malted milk averages 123 calories to the ounce by weight. The chocolate flavor malted milks are somewhat lower in fat and protein and higher in carbohydrates.

PROPERTIES OF MALTED MILK

Plain malted milk is a rich creamy tinted powder, having an agreeable odor and flavor. It mixes readily with water or whole milk and produces a suspension which does not break up on long standing, unlike mixtures of dry milk and malt extract in solution. Malted milk will keep indefinitely in any climate in the closed container, though it takes on moisture rapidly when exposed to the atmosphere. The chocolate flavored product exhibits the characteristic chocolate color and flavor.

Although malted milk is not sterile, the bacterial content is uniformly low and the various heating processes effectually destroy any pathogenic bacteria which might have been present in the milk used.

The digestive properties of malted milk are well known. Not only is the powdered condition of the product conducive to easy assimilation in the human digestive system, but according to some authorities, malted milk is diastatically active, because of the presence of enzymes. In the evaporating process, there is no lipolytic action on the milk, but there is a definite proteolytic action.

NUTRITIONAL QUALITIES AND USES

From the analysis given, it is apparent that malted milk is high in the energy-producing carbohydrates and also rich in fat, proteins, and minerals. Since the milk, wheat, and barley used in the manufacture of malted milk are all rich in vitamins, the product should likewise be well supplied with these essential accessory food factors, especially as the heating processes are not destructive to any of the vitamins except possibly the antiscorbutic vitamin C. Recent biological tests have, in fact, demonstrated that malted milk contains adequate amounts of vitamins A, B, and G.

The proper nutritional uses of malted milk are varied, including functions in both normal and therapeutic diets. Both plain and chocolate flavored malted milks are particularly useful in imparting flavor and palatability to ordinary whole milk, as well as by contributing to its ease of digestion. Because of its blandness and high nutritive value, malted milk mixed either with water or milk is well suited in the diets of invalids, convalescents, and the aged. Chocolate malted milk has considerable vogue as a carrier for the barium meal necessary in x-ray work.

Since its first appearance on the market, malted milk has been employed in infant feeding, at one time much more extensively than at present. When diluted merely with water, the resulting formula is somewhat too high in carbohydrates to give satisfactory results in the average feeding case. As a temporary expedient in coping with acidosis, or after certain types of gastro-intestinal troubles, it is often very useful. Malted milk may be used as a suitable modifier of milk for infant feeding, using a teaspoonful to each one-quarter ounce of milk in the formula.

For older children malted milk is a valuable food. As a between-meal beverage for active children, it provides needed energy to overcome fatigue, without seriously affecting appetite. Recent studies of the nutrition of children suffering from chronic bone disease have shown that malted milk, mixed with water or whole milk, and used as a supplement to the regular diet, will produce highly satisfactory gains in weight. Similar results have been obtained with poorly nourished but otherwise healthy women industrial workers. In the treatment of insomnia, malted milk taken moderately hot at bed time often seems to be conducive to sleep.

SUMMARY

Malted milk, invented in 1883, is a powdered product made by combining barley malt, wheat flour, and whole milk and evaporating to

dryness. The true malted milks are always labelled as such and not by masquerading trade names.

Malted milk is uniformly low in bacteria.

The product is rich in carbohydrates and is well supplied with fat, protein, and minerals.

Vitamins A, B, and G have been shown to be abundant in malted milk. There is probably some destruction of vitamin C in the manufacturing process.

Malted milk is a useful and valuable food for children and adults, whether mixed with water or with milk.

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EDITORIAL

Diverse Diet Therapies*

Dietetic habits have seemed always to be matters concerning which an individual, regardless of knowledge, felt free to offer advice to any listener. An investigation of ancient and ridiculous dietary recommendations by no means indicates that contemporary dietary freaks and eccentricities are lacking. Striking parallels will undoubtedly suggest themselves.

The Mosaic law is an example of an elaborate dietary régime which is still being followed by thousands of people. In the classical world of Greece and Rome, interest in dietetics flourished, as shown clearly by the works of Celsus, who wrote in the time of Tiberius. In the preface of the first book of "De Re Medicina," his greatest work, he describes the three branches into which medicine has been divided since "early times," first, diseases to be treated by diet, second, diseases to be treated with medicines, and third, those to be treated manually He describes two schools of dietetics, the empiricists who rely on experience, and the rationalists who proceed from theory. He states that overdrinking is better than overeating, and gives seasonal dietary advice. All the foods with which he was acquainted were classified in accordance with certain theories of strength and weakness. The basis of division among the individual items often depends upon such irrelevant data as to whether wings or feet are used (for birds), or whether grown on a hill or in a valley (for grains). Some of Celsus' therapeutic suggestions have a modern ring. Meats, particularly pork, are to be avoided in epilepsy, and one day of fasting is recommended after three of food. Specific dietary remedies are given for numerous diseases, often with the not unwise suggestion that the victim—or patient—partake sparingly.

In the 16th Century, when medicine was dominated by the influence of "black" and "white," or "natural" magic, and by the physiologically grotesque conception of the "humours," dietetic advice and therapy was extensively proffered.

* This editorial is based on three papers by The Honourable William Renwick Riddell, LL.D., D.C.L., Justice of Appeal, Toronto, and President of the Canadian Social Hygiene Council. "Some Mediaeval Dietetics" was read before the American Dietetic Association at its annual convention in Toronto, September 9, 1930, and the other two papers are unpublished.

Nicolaus Piso, a physician of Paris, incorporated a certain amount of diet therapy in a book originally intended for the instruction of his sons, whom he destined for the medical profession. His treatment of baldness is a pleasant one: "They should eat food that is tender and of good juice, such as the flesh of chickens, partridges, pheasants, capons, or perhaps wethers well boiled. Let them abstain from everything with abundant hot juices, from everything prepared with honey and pepper, from everything salted or pickled."

For nightmares, Piso recommends juicy foods, as also for melancholia. Liquid diet is suggested for insanity. For catarrh, milk should be avoided, moderation in food is very important; the direct rays of the sun and moon, bathing, and wine are dangerous.

In the field of Natural Magic, Paracelsus and his followers obviously had an alibi if the patient died. The formulae for treatment were so complicated that it is most probable that no one could comply with every detail, hence the missing item killed the patient! One of the simpler remedies was a prophylaxis against inebriation, "eat five or seven bitter almonds fasting, and before taking a drink." Red cabbage, purslane, sour apples and charms were also used for the same preventive purpose, which seemed to demand much attention in ancient times.

With the usual temerity of magicians, a dietetic formula for strengthening of memory is proposed. Mint, immediately after supper, was assured to promise pleasant dreams. Even invisibility was promised, if certain rites were observed.

Looking about, one may feel that these four hundred years have not carried us as far from quacks, fads and frauds, as we might wish. Despite the passing of the Dark Ages, there still seem to be dark corners.

O. O. F.

Present Status of Pellagra

In the January issue of the *Red Cross Courier*, Dr. W. H. Sebrell, a former associate of Dr. Joseph Goldberger, discusses the prevention and cure of pellagra.

In 1735, pellagra was described and studied by the Spanish physician, Casal, who suggested the connection between the disease and diet. The later work of Goldberger and his associates established beyond a reasonable doubt that pellagra is a vitamin deficiency disease. Although first recognized in the United States by Gray of New York in 1864, it was not until 1908 that pellagra was known to be endemic in the United States and widespread enough to require serious attention.

Few deaths from this disease occur in the northern and western states, most of them being located in the area south of the Potomac and Ohio Rivers. Although there are some pellagra fatalities in nearly every state in the Union, most are restricted to the Southern states. The incidence of the disease varies according to economic conditions. A reduction in family income accompanied by stationary or rising food prices, is followed by an increase in incidence.

Pellagra, says Dr. Sebrell, has been found to be most frequent in children between two and fifteen years of age. It is estimated that in 1929 there were between 200,000 and 225,000 cases, the majority being in the Southern States. During that year, about 7,000 deaths from pellagra were reported. During the first five months of 1930, 8,784 cases had been noted.

Dr. Sebrell describes the disease as follows: "The patient suffering from a fairly well developed, representative attack of the disease will be found to have an eruption, not unlike a sunburn in many respects, usually on the back of the hands and forearms, practically always involving both hands and terminating sharply at approximately the same level on each hand. This eruption may also occur on the feet, or around the neck, or less frequently, any portion of the body surface. The appetite is poor or variable and is accompanied by the symptoms which are usually designated as 'indigestion.' The patient complains of being nervous and 'rundown,' and perhaps depressed. These symptoms, with the eruption, which is characteristic, form an almost unmistakable picture. There are various other symptoms, such as stomatitis and severe mental depression, which it is not necessary for us to go into at this time. These, in brief, are some of the more distinctive signs in the individual afflicted with pellagra."

In discussing the treatment of pellagra, emphasis is laid on the fact that it must be ascertained that the patient is actually *eating* the pellagra-preventive foods, and not avoiding them on account of eccentric tastes or voluntary diet restriction. The prevention of pellagra depends only on this element, the eating of pellagra-preventive foods, but pellagra persists, and will probably continue to do so, when there are poor economic conditions.

The food found to be richest in the pellagra-preventive vitamin is dried pure yeast. Two teaspoons three to six times a day will cure or prevent pellagra. Recent data from Dr. Paul S. Carley of Belzoni, Mississippi, reports definite benefit in 175 out of 176 cases treated with

yeast. Other pellagra-preventive foods are fresh lean beef, fresh milk or buttermilk, liver, eggs, and canned salmon; tomatoes or canned tomato juice, have also been found of value.

In conclusion, Dr. Sebrell tells of the investigations toward finding other pellagra-preventive foods and emphasizes the importance of educating people to use the proper foods.

CURRENT COMMENT

American Dietetic Association Section Activities for 1931

Administration Section. Lenna F. Cooper, last year's section chairman, recommended that further study be devoted to the Code of Ethics and the Personnel Study, both of which have attracted a great deal of interest and favorable comment. No definite announcements can, at this time, be made concerning the first.

Rose T. Baker, Director, Phillips Andover Commons, Andover, Massachusetts, is continuing as chairman of the personnel study committee. Her committee is representative of various sections of the United States and Canada. The proposed questionnaire will cover representative hospitals of from 100 to 500 bed capacity, and is sufficiently inclusive to give information which will be useful to the Education Section.

Other studies determined upon because of requests made by members will include: forms made available for purchase, receipt and inventory; a study of methods for computing food costs; architects', kitchen equipment engineers', and dietitians' specifications which should be coordinated.

Helen E. Gilson, *Chairman,*
Pennsylvania Hospital, Philadelphia.

Diet Therapy Section. A letter outlining the proposed activities of the Diet Therapy Section has been sent to members who last year designated the work of the section as their major interest. The problems suggested are as follows:

1. Work on the collection of calculated recipes for use in quantitative diets, as begun by Miss Harrington and Miss Anderson, will be continued. These recipes are prepared from weighed amounts of foods under standard conditions, and calculated from cooked

weights of at least three samples. Such a recipe file should be of definite value to the therapeutic dietitian and her diet kitchen staff.

2. The case study form developed by Miss Ross and Miss Anderson will be used experimentally. It is hoped that at least twelve people will volunteer to use the form with patients; this should provoke discussion and suggestion.
3. Miss Davis outlined the need for, and the important features of a collection of data on food composition. Active developments of her plan are proposed for this year.
4. We are initiating a quality study of therapeutic diets. By calculating and averaging a substantial number of diets involving restrictions, it may be possible to establish standards which will safeguard potential weaknesses in these diets. This preliminary study will include diets for ulcer, obesity, and nephritic cases.
5. A series of standard hospital diets, general, light, soft, and liquid, will be compiled and approved. Many minor differences exist in nomenclature and make-up of these in various hospitals. The need for a uniform standard is apparent.

Interested members of the Association have been given an opportunity to indicate a choice among the following activities: recipe file for quantitative diets; case study forms; food composition data; quality study of therapeutic diets; ulcer diets; reduction diets; nephritic diets; and standard hospital diets (an attempt at uniformity).

If there are any members who were not reached by letter and who would like to participate in the section activities for this year, they are urged to write to the Chairman indicating the problem in which they are interested.

MRS. DOROTHY STEWART WALLER, *Chairman,*
University Hospital, Ann Arbor, Mich.

Education Section. The primary work of the section for this year is the personal inspection of hospitals on the approved list as regards training courses for student dietitians. In addition, we are hoping to make some progress in the development of a tentative list of colleges offering adequate academic preparation for dietitians. Other tentative smaller projects will be developed during the ensuing year.

MRS. MARY DEGARMO BRYAN, *Chairman,*
Department of Institutional Management, Teachers' College, Columbia University, New York.

Social Service Section.

1. To (a) study the scope of the Section;
   (b) define its aim;
   (c) discuss the adequacy of its name;
   (d) bring in a recommendation for a change in name if it is deemed advisable.
2. To work on outlines for teaching patients in clinics, including suggestions for illustrative material
3. To prepare a report, based on information obtained from active dietitians and nutritionists on:
   (a) Type of work engaged in—brief statement of history of the beginning of such work.
   (b) How work is being sponsored and supported.
   (c) By whom work is directed and supported.
4. To prepare a report of findings in hospitals doing some phase of social service work through dietitians and nutritionists:
   (a) At the hospital as a part of hospital routine, or through the out-patient department.
   (b) Through dietitian or nutritionist working from the hospital direct to houses.
5. To (a) ascertain the special interests of members of our Association who are in the commercial field;
   (b) invite them to join this section;
   (c) get from them suggestions as to problems which should be studied.
6. To work on exhibit material in coöperation with the American Medical Association.

LAURA COMSTOCK, *Chairman,*
Eastman Kodak Company, Rochester, New York.

THE WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION

The final session was held on February 19, 20, and 21, at Washington, D. C., with Dr. Samuel McC. Hamill as chairman of the Medical Service. This Service was divided into three committees, one discussing Growth and Development, another considering Prenatal and Maternal Care, and the third devoted to Medical Care of Children. At the meeting of the Committee on Growth and Development at which nutrition was discussed, Dr. John R. Murlin presided and Dr. Lafayette B. Mendel presented a paper. Another address of interest to dietitians was Miss Lucy Gillett's discussion of the "Relation of the Nutritionist to the Health

Program," which was given before the Committee on Medical Care for Children.

Official Spelling and Definition of the Term "Dietitian"

A committee of the American Dietetic Association recently reported on the definition of the term "dietitian," as follows:

"Any person who is qualified for membership in the American Dietetic Association is, by virtue of uniform basic training and required experience, entitled to be designated as a 'dietitian.' Such persons are being employed in the following capacities:

(a) By organizations such as the American Red Cross, tuberculosis associations, school boards, boards of health, social service associations, and others of a similar nature interested in promoting educational work in good food habits, normal nutrition and positive health.

(b) By hospitals and sanatoria, in which, so far as possible, the principles of normal nutrition are to be applied in feeding sick persons. The dietitian may be engaged in administration, diet therapy, or teaching. She may instruct medical students, nurses, student dietitians, in-patients, or out-patients.

(c) By schools and colleges, hotels, clubs, cafeterias and lunch rooms, as managers of food service, business managers, directors of residence halls and other similar positions.

(d) By food manufacturers and distributors of food, in the research field, or in educational and advertising work.

(e) By colleges, universities and normal colleges, as teachers in nutrition, or in research work."

1931 Award of Walter Burns Saunders Memorial Award

The second award of the Walter Burns Saunders Memorial Medal, given by W. L. Saunders II, his son, for an outstanding service to nursing will be made this year. Any nurse who is a member of the American Nurses' Association and who fills the following requirements is eligible: "The recipient of the award, according to the wishes of Mr. Saunders, is to be a nurse who has made to the profession or to the public some outstanding contribution, either in personal service, or in the discovery of some nursing technique that may be to the advantage of the patient and to the profession. The only kind of service excluded is that of writing." Recommendations may be presented to the Headquarters of the Ameri-

can Nurses' Association, 370 Seventh Avenue, New York, or, if preferred, to the president of one of the three national nursing organizations. All recommendations must be received before April 6, 1931. Comprising the Committee on Award are: Elnora E. Thomson, R.N., President, American Nurses' Association; Elizabeth C. Burgess, R.N., President, National League of Nursing Education; Sophie C. Nelson, R.N., President, National Organization for Public Health Nursing; and W. L. Saunders, II, Esq.

Dietitian Training in Hungary

The American Dietetic Association is constantly receiving requests for information from various parts of the world. Recently Dr. Gabriel Mészáros of University Hospital, Royal Hungarian Francis Joseph University of Szeged, Hungary, sent an outline of the course in dietetics offered there. The course in dietetics lasts one year. At least six months are spent in the kitchens of the different clinics, and one month each is spent in the "preparatory section, the storage, the butcher's shop, the dairy section, the flour produce section, and in the central office" in order to get acquainted with central administration. Six periods are taken up with the elements of physics and chemistry, and seven with biology. Some of the other interesting items in the course are four periods in kitchen hygiene, eight periods on "allotment of ingredients for one person," six periods on organization of food services, including some work on the history of human feeding, six periods on office administration, and three periods on bookkeeping. Dr. Mészáros speaks of the assistance which Pattee's *Practical Dietetics* has offered in their work. Mrs. Emily L. Hilbert is chief dietitian of the University Hospital's Central Food Department. As the entrance requirements for the course are high, including an entrance examination in cooking, it would seem that the dietitians from this University should be well trained after the year's work as outlined by Dr. Mészáros.

Recent Information from the Department of Agriculture

Wide Interest in Home Economics Research. In the foods and nutrition division of the Bureau of Home Economics, according to Doctor Stanley, new summary tables on the proximate composition of 121 classes and varieties of fresh vegetables have been completed and are in press. With the increase in the variety of fresh vegetables in the American

dietary there has been a growing demand from nutrition workers for reliable information on the chemical composition of certain vegetables not included in the older standard food-composition tables.

Vitamin studies have revealed facts about foods not hitherto looked upon as valuable sources of vitamins.

Studies of the vitamin B, C, and G content of a commercial banana powder showed that this powder was equal, weight for weight, to fresh bananas in content of vitamin B, the anti-neuritic vitamin, but that it contained very little vitamin C, and only one-sixth the vitamin G content of fresh bananas. A report is being published on the results of vitamin studies of three varieties of spinach, both fresh and canned.

Home Economics investigators completed a study of pellagra in South Carolina. Analyses thus far made of the facts in the case indicate that the families affected by pellagra have a diet that is too low in calcium, iron, protein, and in vitamins A, B, and C, as well as deficient in vitamin G, the pellagra-preventive factor. The results from these studies indicate that without much increase in cost, intelligent choice of food materials could add to these restricted diets enough vitamin G to prevent pellagra.

Some quality tests of vegetable foods, especially potatoes and rice, have been started in coöperation with the Bureau of Plant Industry. These tests demonstrated that storage conditions affect materially the cooking quality of potatoes because of the accumulation of sugar in potatoes held at low temperatures. This point is of practical significance to restaurant keepers, manufacturers of potato chips, and those engaged in handling potatoes for either of these groups.

The work on the palatability of meat, handled in coöperation with the Bureau of Animal Industry, has continued. So far there appears to be no definite relation between roasting temperature and the tenderness and flavor of beef and lamb roasts. There is, however, a close relation between cooking loss, or shrinkage, and oven temperature. The bureau recommends reduction of the oven temperature after searing the meat in a hot oven. This prevents the shrinkage that occurs when all of the cooking is done in a hot oven.

Studies of standards and cost of living have been completed for three groups of families—farm families, families of business and professional men living in cities, and families receiving mothers' pensions. Investigators have prepared reports covering the food and clothing expenditures of the farm group and all items in the family budget for the two latter

groups. During the year the Bureau initiated a new study of a group of families living in the southern Appalachian highlands in Kentucky. An annotated bibliography of more than 200 titles has been prepared covering all the important standard and cost of living studies that have been made in the United States.

The study of how homemakers use their time has been extended during the year to include city households in order that a comparison may be made between rural and urban conditions. Records have been received from over 500 college graduates living in cities, a fairly uniform and relatively favored group as to economic and social status. These afford a significant contrast with the larger group of rural homemakers previously studied.

The Market Basket. A plan to make every cent spent for food count in preventing malnutrition and in maintaining health has been developed by the Bureau of Home Economics for the President's Emergency Committee for Employment. This food plan or guide is designed, primarily, to help families with low incomes, according to the announcement made by Dr. Lillian M. Gilbreth, chairman of the Woman's Division of the Committee.

The following food guide has been tested thoroughly by the Bureau, and the diet outlined will prove adequate from the standpoint of thrift as well as health. The Bureau will also offer weekly articles dealing with food news. In these articles the food guide will be applied to families of differing sizes. The articles will outline the kinds and quantities of foods required, and, where practicable, prices will be quoted.

Most of the foods shown are what are known as staples, so, with the exception of meat, the price fluctuation throughout the country is not especially great. The bureau will suggest, from time to time, new and attractive ways to prepare the simple foods in order to offset monotony.

FAMILY FOOD GUIDE

Every meal—Milk for children, bread for all.
Every day —Cereal in porridge or puddings.
Potatoes.
Tomatoes (or oranges) for children.
A green or yellow vegetable.
A fruit or additional vegetable.
Two to four times a week
Tomatoes for all.
Dried beans and peas or peanuts.
Eggs (especially for children).
Lean meat, fish or poultry, or cheese.

A Family of Five
(including the father, mother and three young children)
should buy every week:

Flour and cereal (1½ lb. of bread counts as 1 lb. flour)	18	to 20 pounds
Whole milk	23	to 28 quarts
Potatoes	1	to 1½ pecks
Dried beans, peas, peanut butter	1	to 2 pounds
Tomatoes, canned	3	quarts
Other vegetables (including some of green or yellow color) and inexpensive fruits	15	to 18 pounds
Fats, such as lard, salt pork, bacon, margarine, butter, etc.	2½	pounds
Sugar and molasses	3	to 4 pounds
Lean meat, fish, cheese, eggs	5	to 7 pounds
Eggs (for children)	8	eggs

With only $7.12 a housewife can provide four adults with three meals a day for one week if she follows the food guide. This is the average cost for a week's market basket, outlined in this article. The sum is derived from figures gathered in twelve cities throughout the country. New York City tops the list with a cost of $7.83, followed by Charlotte, N. C., with $7.57. Detroit prices are the lowest with a figure of $6.39 and Pittsburgh comes next with $6.75.

Committee Lists Low Cost Foods to Provide Adequate Diet in South. A sub-committee of the National Drought Relief Committee is assembling in usable form the scientific information needed by nutrition workers in the drought areas, who are called upon to advise families on diet. It has prepared tables showing adequate low-cost diets for the use of professional nutritionists in the drought-stricken regions. Some of these tables are interpreted for the homemaker in terms of the weekly market basket. Another market list has been worked out for tenants on plantations where all food supplies are obtained from central distributing stations or commissaries. These families expect and want certain customary foods, and the supplementary foods needed for adequate nutrition differ somewhat from those included in lists of foods that conform to ordinary dietary habits.

During the late winter and early spring the diet of some of these tenant farmers over long periods has consisted largely of white flour and corn meal, salt pork, sugar, and syrup, with very small amounts of vegetables, milk or lean meat. The addition of milk—fresh, canned, or dried—to such diets is strongly urged as the first protective measure, particularly where there are children. A pound of tomatoes per person per week is suggested as a second additional purchase if the family resources are very limited and can not be supplemented enough to procure all the food

materials recommended in other market lists. Where pellagra actually exists nutritionists recommended an ounce of pure dried yeast per person per day until recovery.

"Medium Sized" Potatoes Preferred by Produce Trade. The most desirable sizes of potatoes in eastern consuming markets range from 2¼ to 3 inches in diameter, according to the Bureau of Agricultural Economics. Dealers who supply hotels and restaurants want potatoes ranging from 2¾ to 3½ inches in diameter and weighing from ten to fourteen ounces. Good-sized tubers are best for filling orders for French fried and "shoestring" potatoes since these dishes require fairly long pieces. There is less waste in using the larger tubers for mashed potatoes. The very large sizes of tubers weighing more than fourteen ounces, which are termed "bulls" or "lumpers" by tradesmen, are not wanted by any class of trade, and many dealers object to accepting these in U. S. No. 1 stock. Considerable objection was expressed to lots of potatoes that show a large percentage of small potatoes, that is, under 2¼ inches in diameter. However, many independent retailers were found to be carrying so-called "seconds"—potatoes ranging usually from 1½ to 2 inches in diameter—for certain classes of trade. There is some demand for this low-priced stock from people who do not care to pay market prices for average U. S. No. 1 size.

Scientific Testing of Recipes

In the past, housewives have often been disappointed to discover, after following carefully the instructions in a recipe of an advertised product, that the recipe did not produce, in a home kitchen, the desired result. In order to eliminate the use of unsatisfactory recipes in advertising, the Gardner Advertising Company of Saint Louis have installed an experimental kitchen for the complete testing and origination of new recipes before they are used in advertising of any kind, whether in newspapers, magazines, or printed matter. Another function of this experimental kitchen is the testing of the products used in the recipes. Both containers and their contents are examined. Recommendations for improvement can be made to the company's clients.

The experimental kitchen and dining room have been constructed with the intention of duplicating the atmosphere of a modern, well-appointed home, in order to form an exact idea of how the finished recipe will look and taste in the homes of American's housewives. This work is under the direction of Miss Thelma Reinke and her staff of dietitians who supervise and carry on all testing and preparation of recipes.

PERSONNEL STUDY OF DIETARY DEPARTMENTS OF HOSPITALS*

ROSE T. BAKER AND MARY BARLOW

For the past few years the American Dietetic Association has been working toward hospital personnel standardization with a view toward accurate organization within the hospital dietary department. This year the committee made a personnel survey of the dietary departments of hospitals in Pennsylvania and its bordering states.

In order to determine *standards* it seemed advisable to discover, if possible, existing conditions within the hospital dietary departments. Two questionnaires were developed that the results might be more accurate, a preliminary questionnaire being sent to the dietary departments and the second used on personal interview with the head of the hospital and the head of the dietary organization. This type of accurate survey had to be started in a very meagre and limited way because of lack of time and funds.

The following are some of the points that were incorporated in our first questionnaire:

1. The dietitian, to whom is she responsible, her training, her wages, etc.
2. The general hospital, facts such as size, number of meals served, patients, doctors, nurses, employees, whether or not there is a student dietitian course offered.
3. The physical units in the building, such as the plant and equipment, type of service of food.
4. Food purchase facts.
5. Personnel standards and requirements, such as hours of work, wage scales, living quarters, welfare arrangements, including medical examinations, help's living and rest quarters.
6. Educational activities for in-patients, for out-patients, student nurses, internes, etc.

This questionnaire covered about five pages of questions, and had to be filled out more or less in detail in order to obtain any clear picture of the situation. The result may not apply to all states in the Union,

* Report given at Administration Dinner, Thirteenth Annual Convention of the American Dietetic Association, Toronto, September 8, 1930.

and it is likely that another year's study should be given in order to be able to draw any adequate conclusions. We have had one hundred replies from two hundred questionnaires.

It was rather interesting, in checking the results, to find that the adequately trained dietitians often have the best organizations. Dietitians inadequately trained, often say they work all day; they need assistance and their employees are unhappy in their jobs. The supposition is that the trained person must know how to organize all the jobs within the institutional unit, thus making everyone more contented, no matter how meagre the salary and how small the job.

For the one hundred questionnaire received, the working day averaged between eight and nine hours, including in most cases meal hours. In only one instance did the employees work twelve hours per day; so we find no cause for complaint on this score in any of the one hundred hospitals. In many cases the days off in the week were entirely too few; although many gave at least one day off, in some cases only half a day was given. The yearly vacation usually was one week after one year's work, and in a few cases two weeks were given after one year's work. This, probably, corresponds with most business organizations.

One of the worst features from the employees' standpoint, in the average hospital of today, seems to be the living quarters. One questions why the hospital takes the viewpoint that it is cheaper to house their employees, since they must also consider that they are responsible, not only for their physical welfare, but also for their spiritual and moral welfare. Frequently, the living quarters were found to be in the basement rooms or in attics, where it was difficult for any human being to live happily. Sometimes they were housed four or five in a dormitory room. Some of the better hospitals have more agreeable living quarters, but even the best need to exercise more care in order to attract a high type of worker. Not only the living conditions are being changed, but the working conditions. Many institutions, especially hospitals, seem to think that employees can work in basements without good light or artificial ventilation, and at temperatures far above the normal. Rest rooms were lacking in many of these hospitals. Employees living and working in poor conditions cannot coöperate in raising the standards of the hospital. Undue fatigue enters into the employees' day, because of these many points. Other answers were given to the question on causes for fatigue; over-eating, as given by one dietitian, seems rather ludicrous. Since this questionnaire was sent out during the summer of 1930, heat was given, naturally, as a cause of fatigue. Another answer

relative to fatigue, appearing in a number of replies, was attributed to routine job, the worker losing all interest in the work. This, we feel, certainly reflects on the administration. If the head of the department is not interested and willing to make every job within her department of interest to the worker, surely the worker himself will become a drudge at his work.

In practically half of the hospitals surveyed, health examinations were required. Certain ones did not appear to have any particular standard, while others had no health requirements whatever. The health laws in most of the eastern states only require health examinations for commercial food handlers. Hospital employees did not come under this law. Boards of Health were consulted as to the workability of this clause applying to hospitals, and generally agreed that hospitals necessarily should be interested in perfect health surroundings, as they were the communities' centers of health improvement. Upon investigation it was found that many of the hospital authorities did not seem to realize that the employee should be physically sound in order to handle food. Dietitians should concern themselves with this situation, not only for their own departmental welfare, but for the general good of society.

A large section of the questionnaire covered plant and equipment. In the larger hospitals, including some of the oldest in the country, were many central kitchens, on the whole modern and up-to-date. Certain equipment, however, was old and almost worn out. Replacement equipment was practically always up-to-date and adequate for the serving of the food.

The store rooms were handled in many different ways in these hospitals. There seemed to be a general lack of organization, and it was apparent that a closer check should be demanded of all store room employees.

The food surveys in these hospitals varied greatly and a detailed report of this may be given later. It was of interest to find, for instance, that some of the hospitals never serve fresh fruit for breakfast, while others serve different fruits every day. It was gratifying to find so many attractive combinations of lunches and dinners, also to observe the types of meals given to doctors, nurses, and employees. Perhaps one of the most important points noted was the amount of waste and the imperfect checking of this waste. If all departments are not working toward the goal of conservation, there is a waste. If the nurses and doctors are not interested in demanding an accurate check on all the food consumed, it becomes waste. If efficiency is not a key-word

throughout the entire organization, there is usually a loss of human energy, time, or money, and sometimes all three. That is why all food should be carefully purchased, prepared, served, and all surplus saved. Even the garbage—old paper, grease, bones, etc., all have a monetary value. There should also be a careful check on loss of silver, and china breakage. If a high standard of morale is developed within the institutional organization among all employees, they will take a keen interest in its welfare.

In many hospitals the educational activities are limited, but in others, particularly the larger ones, the educational viewpoint is stressed, first, when individuals come in as in-patients, and second, when they are returned for weekly or periodic consultation in the different clinics. The modern hospital is becoming more aware of the fact that preventive measures are of far greater value than curative ones. This is demonstrated in some of our hospitals when one sees the adequacy of the instruction given in the out-patient department, which in the modern scientifically run hospital, is becoming more and more vital in all communities. Some of the instruction given is as follows:

1. Classes for children in nutrition and right health habits; special classes for many nationalities; also special children's classes in waiting rooms of the various clinics.
2. Adult classes for instruction in special diseases, for expectant mothers, and health educational work for various groups.

It appears that the future and the development of each dietary department within the modern hospital is dependent for the most part upon the adequately trained dietitian. The dietitian, therefore, should appreciate her responsibility and do all in her power toward the advancement of the hospital's good.

SOME RECENT DEVELOPMENTS IN DIET THERAPY*

ELVIA V. GAUSS, B.A.

Among the recent advances in the field of dietetics is the elaboration of the diet in pernicious anemia. It is just a few years since Minot and Murphy developed the liver diet in the treatment of this disease. Within the past six months numerous articles have appeared on the use of hog's stomach as a source of the hematopoietic factor, the anti-anemic factor that cures pernicious anemia. Prior to the work of Minot and Murphy in 1926, pernicious anemia was considered fatal. Today this disease, like diabetes, may be controlled by rational dietetics.

Pernicious anemia is now believed to be caused by a deficiency in vitamin E, and is characterized clinically by a profound anemia, a deficiency in the gastric secretions, and degenerative changes in the spinal cord. By supplying the patient with food which contains vitamin E, a rapid improvement results. Minot and Murphy's first report stated that "in almost all instances, the response to feeding liver was prompt, and the patients generally became better. Their blood has remained, with very few exceptions, in a very satisfactory condition." This report revolutionized the entire conception of pernicious anemia, and gave an impetus to the study of clinical dietetics. Their work is one of the outstanding contributions which has helped to establish dietetics on a scientific basis. In 1927, Cohn and his associates showed that an active extract, rich in the hematopoietic factors, could be prepared from liver. This work is the basis of the numerous commercial liver extracts that are on the market.

Stimulated by the work of Castle on the blood maturing substance in the stomach of normal persons, Sturgis and Isaacs undertook to study the effects of feeding stomach tissue to patients with pernicious anemia. The preparation they used was made by desiccating fresh whole hog's stomach, so that 30 grams of the dried substance represented 190 grams of the fresh tissue. They fed the patients daily 15 to 30 grams of this desiccated extract in water, with immediate and favorable response. These observers concluded

that the feeding of desiccated whole hog's stomach produces a complete remission in pernicious anemia which supplements and substantiates the work of

* Presented before the Colorado Dietetic Association, Denver, Colorado.

Castle, since it indicates that stomach tissue contains a red blood cell maturing substance. The question of the origin of the active principle in the desiccated stomach is now being tested experimentally. Several possibilities may be considered. One is the presence of an enzyme or similar substance which may act on the protein present in the stomach tissue during the period that elapses after the organ is removed from the animal and before it is dried. This would be in accord with Castle's experiment. Another possibility is that there may be a supply of the active hematopoietic principle itself present in the stomach wall, as it apparently is in liver and kidney. Experiments are now in progress to determine whether the mucosa or the muscle layer of the stomach or both contain the red blood cell maturing substance. The observations so far are in accord with the idea that patients with pernicious anemia evidently have lost, or have never had, the ability to secrete a substance in their stomachs which has the power to produce a blood-maturing material from food.

From the limited amount of available data it is suggested that stomach tissue, per gram of fresh material, is more active than liver, as a smaller amount of the former is required to induce a remission in a patient with pernicious anemia. It is interesting to note that stomach tissue and liver are both active as a red blood cell maturing agent in patients in whom there is an absence of free hydrochloric acid.

Connor, in 1930, reports his observations on feeding raw pig's stomach to patients with pernicious anemia. He obtained the stomach of pigs taken from inspected animals immediately after killing. The stomachs were tied at the outlet to prevent contamination by the intestinal contents, washed in running water, and dipped for a few seconds in boiling water. The stomach tissue was then finely divided in a grinder in such a manner that the fiber was removed and discarded. One-half pound daily was given to the patients. When prepared with tomato, orange, cranberry, or other fruit juices, it was usually taken by the patients without objection. Satisfactory results were reported.

While liver has been found to be a specific in pernicious anemia, it has not proved equally effective in the treatment of secondary anemia. Recently, however, there has appeared a report in the *Journal of the American Medical Association* by Keefer and Yang of Peiping, China, who claim satisfactory results from the use of liver when given in conjunction with iron. A number of patients with secondary anemia were placed under observation, then either liver, or iron in the form of ferrous carbonate pills, was added to their diet, and finally both were added. Following the addition of liver or iron alone there was a definite increase in the rate of hemoglobin regeneration. However, in every case in which

liver and iron were given together, the rate of hemoglobin regeneration increased over that in the period when one type of therapy was used. This rate was particularly noticeable in patients with hookworm disease.

The artificial preparation of ergosterol, a substance which contains vitamin D in a concentration considerably stronger than every other known source of this vitamin, including cod liver oil, is of interest. This work began with Steenbock and his associates when they succeeded in demonstrating for the first time that exposure of a rat's diet to ultraviolet radiation could make it growth-promoting and bone-calcifying. In 1924, Hess and Weinstock reported that rickets could be cured in children by exposing them to ultraviolet radiation. About the same time there appeared reports in which it was shown that rickets could also be cured by the administration of cod liver oil. Steenbock considered that in medical practice identical results were secured by the direct treatment of the patient with ultraviolet radiation, and by the administration of cod liver oil. Inquiry produced the observation that the antirachitic activity in irradiated fats and cod liver oil was localized in the non-saponifiable constituents. Subsequently it was shown by Windaus and Hess that a definite compound exists in the non-saponified factors of fats termed ergosterol which on exposure to ultra-violet light becomes a potent source of vitamin D. Since this time many papers on the theoretical and the clinical aspects of this subject have appeared and there is still much discussion as to its safety and proper dosage.

In 1929, Hess, Lewis, and Rivkin, of New York, made further experimental studies on infants ranging from three to nine months old, using preparations of irradiated ergosterol. Various amounts of this preparation, ranging from minimal doses to what was considered generous amounts were given. They stated that "full term infants were protected from rickets, almost in every instance, except when the smaller amounts were given." It has been found that irradiated ergosterol given in adequate doses may occasionally fail to protect the rapidly growing premature infant.

It has been concluded that

> irradiated ergosterol is a specific for rickets, tetany and osteomalacia. As yet it has not been proved of definite value in other clinical conditions. In the past year a standard dosage has been established for the prevention and cure of rickets. Premature and exceptionally rapid-growing infants must be regarded as a separate group and dosage gauged according to a different scale. The basis of this standardization is a biologic estimation of antirachitic potency rather

than a gravimetric assay of the irradiated ergosterol. It has been found that if the prescribed dosage is observed neither toxic symptoms nor hypercalcemia need be feared. These phenomena seem to be entirely or almost entirely due to an excess of antirachitic action. Hypercalcemia can also be induced experimentally by giving undue amounts of cod liver oil.

Whether ergosterol will ultimately displace cod liver oil in the routine feeding of infants is an open question. Probably the dangers of hypercalcemia will mitigate against its universal employment. On the other hand, it will be used with success in that group of infants who manifest allergic reactions with cod liver oil. Recently the American Medical Association has adopted the name Viosterol for this preparation.

In 1929, Steenbock and his associates, continuing their observations of the artificial preparation of antirachitic properties, showed that various cereal products, such as whole wheat meal, patent white flour, shredded wheat biscuits, cream of wheat, whole corn meal, corn flakes, hominy, and rolled oats were made antirachitically active by irradiation with ultraviolet rays. Further they showed that ordinary household cooking does not have any effect on this activity. The antirachitic potency was found to be stable to autoclaving for thirty minutes at fifteen pounds pressure at sixty degrees C. for a few days. Irradiated cereals retain their potency as long as sixteen months if kept at sixty degrees C. or lower, but after this time there is a gradual loss of potency. These products have appeared on the market within the past year and are said to contain a sufficiency of vitamin D to prevent rickets.

Within the past few years a special diet has been developed at the Sauerbruch Clinic in Germany by Gerson for the treatment of tuberculosis. The principles of this diet are an energy value of 3500 calories, selection of base-forming foods, restriction of sodium chloride, animal proteins, and carbohydrates. The diet is rich in fats and vitamins. At the present time there is insufficient scientific data concerning this diet to permit of its accurate evaluation, consequently it must be considered an empiric diet which is supported by a reasonable amount of clinical observation.

Recently considerable attention has been directed to the relationship between nutrition and dental pathology. Hanke has shown that dental disorders were almost invariably found in persons whose diet is deficient in vitamins, and conversely, a freedom from dental disorders seems to be enjoyed by persons who eat food that contains an abundance of vitamins. The important factor that he observes in the analysis of the diets of 191 patients showing dental disorders, is that an absence of vitamin C is the outstanding nutritional deficiency. The mineral content of the diets, as

well as the mineral metabolism of the patients was also studied, but it was demonstrated that the calcium and phosphorus values of the blood of these patients was not markedly subnormal, and that there was no evidence of parathyroid or vitamin D deficiencies. He concludes that the lack of vitamin C may be the important factor in the initiation of dental diseases. He recommends the following daily diet for those with dental diseases, and as a prophylaxis as well: one to two pints of milk, meat, fresh vegetables, from one-fourth to one-half a head of lettuce, the juice of one-half lemon and one-half pint of orange juice (depending on the age of the individual and on the susceptibility to a vitamin C deficiency), one or two eggs and any desired amount of fresh fruit.

These are a few of the important clinical observations that have been made recently. A vast amount of scientific work is being conducted at present, but a discussion of this is beyond the scope of this paper.

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BOOK REVIEWS

Treatment of Epilepsy. By Fritz B. Talbot. Price $4.00. New York: Macmillan Company, 1930, pp. 308.

The treatment of epilepsy by means of the ketogenic diet could not be more felicitously presented, adequately from every practical and theoretic angle. All the basic principles upon which any feeding program finally depends, are exhaustively while not redundantly examined.

The author gives a fair hearing to those critics that make a marked distinction between the relative susceptibilities to dietetic therapy, of adult life and childhood. He also makes mention of the merits and theoretic basis of therapy through dehydration, although the latter's proponents might have asked for more. The limitations of chemotherapy, the proper place of physical and mental hygiene, of psychotherapy and of surgery, are conservatively and unexceptionally outlined.

Prophylaxis as a function of eugenics is viewed from all angles, though some readers will find the author's conclusions as to propagation unexpected in the light of the evidence that he cites.

One-quarter of the book is devoted to discussing every extratherapeutic phase of grand mal, petit mal, and their congeners. One-sixth comprises the description of other forms of therapy, while the remainder details the dietary treatment. The book is confidently recommended to everyone interested in its subject.

JAMES H. HUDDLESON, M.D.

Nutrition and Diet Therapy. Fifth Edition. By Fairfax T. Proudfit, Instructor in Nutrition and Diet Therapy, University of Tennessee School of Nursing; Clinical Dietitian, Memphis General Hospital; Consultant in Diet Therapy to The Polyclinic, The Rudner Clinic, Memphis Associated Charities, and Public Health Nursing Association, Memphis, Tennessee. New York: Macmillan Company, 1930, pp. 705.

In this edition, Miss Proudfit has changed the name of her book to *Nutrition and Diet Therapy* with a subhead, *A Textbook of Dietetics.* Other changes and revisions have been made within the text and considerable new material added. One rearrangement places the chapter on Digestion and Absorption following those on Food Elements, and preceding those on Fuel Value and Metabolism, thus making a logical and complete sequence.

The material on nutrition and metabolism is brought up to date, and diseased conditions for which diet therapy has but recently been employed are included. In each chapter devoted to diet therapy in specific diseases there is an introductory sketch of what may be expected in the normal state of the organ under discussion. This is helpful in giving a perspective of existing conditions and of what is implied in the treatment.

A course for teaching dietetics and diet therapy to nurses is outlined with suggested plans for each lesson. This is designed to be given in a preliminary course of fifteen lessons on nutrition and cookery and a subsequent course in diet therapy; it follows the plan adopted by the committee of the American Dietetic Association and the National League of Nursing Education.

The numerous charts, tables, menus and recipes which have been a valuable feature of previous editions are to be found in this one, augmented to cover other new subject matter. The table on individual nutrients is both comprehensive and practical; it includes for each nutrient the fuel value, effect of heat, its function in the body, and where and in what form it is digested and assimilated.

That this book has reached the fifth edi-

tion is sufficient testimony of its popularity. Further details of a book so well known are unnecessary. Miss Proudfit has been true to tradition in making her last edition of much greater value than preceding ones.

LULU G. GRAVES.

Exploring for Plants. By David Fairchild, President of the American Genetic Association, a Director of the National Geographic Society. Price $5.00. New York; Macmillan Company, 1930, pp. 591.

This book is in no wise concerned with dietetics or diet therapy, but it contains much that is of interest to the progressive dietitian. At present, Dr. Fairchild is a special agricultural explorer for the United States Department of Agriculture. He is a botanist who has been well known for years in the agricultural colleges of our country.

The book is a fascinating story of native life in Ceylon, the East Indies, the West African Coast and other places in which Dr. Fairchild searched for useful plants to introduce into America. In such a story, native foods and their production necessarily have a prominent place. Innumerable food plants and fruits are described and illustrated, there being one hundred and eighty beautiful illustrations. We learn about the mangosteen, the medicagos and the jackfruit, but we are no less interested in the author's views of chutneys, currys, dates and avocados. The betel nut takes on a new meaning for us. From the description, we are glad that primitive methods of butchering animals for meat are not used in America.

The author states that the material in this book is "from notes of the Allison Vincent Armour Expeditions for the United States Department of Agriculture, 1925, 1926 and 1927," and that the really valuable results of these years of travel and exploration are the growing trees and other useful plants now found in various sections of this country. Despite this expressed opinion of the author we think the book is valuable, too.

LULU G. GRAVES.

Bacteriology for Students in General and Household Science. Third Edition. By Estelle D. Buchanan and Robert Earle Buchanan. Price $3.00. New York: Macmillan Company, 1930.

The recent revision of Buchanan's "Bacteriology" meets the needs of changing viewpoint and developing science. It is a much fuller and more explicit text. The presentation is clearer and the numerous illustrations give it a far more satisfactory sequence than in the former text.

The chapters on bacteriophage are greatly improved. The discussion of the Brucella group as a cause of undulant fever in man is particularly interesting and helpful. In short, Buchanan's third edition is an excellent text for use in general, technical, or liberal arts schools.

E. L. F.

Fads, Frauds and Physicians. By T. Swann Harding. Price $3.50. New York: Dial Press, 1930, pp. 409.

The author has bravely attempted to diagnose and treat the well-known doctors' dilemma, not so much from the doctors' point of view as from the point of view of the patient. Mr. Harding has collected an amazing amount of information, which should be stimulating not only to the medical profession, but to affiliated groups. The standards which he advocates seem far in the distance in our non-Utopian world. The writer impresses one by his sincerity, yet the complex problems presented make one long for the days of the good old family doctor, who, according to Elizabeth Newport Hepburn, in the *New York Times*, would "look right strange in Heaven."

"If Heaven is a stately golden street
Where only healthy, handsome angels dwell;
If all the citizens are trim and neat,
I'd steal along the valley road, to Hell,
For well I know he'll leave the Heav'nly Host
And hurry down where people need him most!"

Granted the over-specialization and the many evils which Mr. Harding so convincingly portrays, it should not be forgotten that even in the complexities, including "rackets,"

of our modern civilization there are countless physicians still true to the ideals with which their profession has become identified. In a world demanding exaggeration and sensationalism, the flagrant abuses of a few should not overshadow the loyalty of many. Whether or not one agrees with the solution, state medicine, which Mr. Harding offers for medical problems, one cannot help being impressed with his sincerity.

M. P. H.

Care of the Infant and Child. By Harry R. Litchfield and Leon H. Dembo. Baltimore: Waverly Press, 1930, pp. 138.

This book is intended to acquaint mothers and nurses with the basic principles in the care and feeding of infants and children. It has eliminated excessive technical detail and impresses the reviewer as one of the better books on the subject now available. Psychological care has been purposely omitted, thus avoiding being involved in a "sea of psychologic breakers." Nevertheless, the book contains many common sense ideas regarding the care and feeding of children, and cannot fail to impress the reader whose experience has been active rather than of the arm chair variety. The book seems to contain all the necessary information, avoiding the discussion of questions in which it is unnecessary for the average mother to become involved. A rather unusual departure in such books is a chapter devoted to infant gymnastics.

M. P. H.

A Primer for Diabetic Patients. Fourth Edition. By Russell M. Wilder. Price $1.50. Philadelphia and London: W. B. Saunders Company, 1930, pp. 138.

This diabetic handbook is probably the oldest of the large and constantly growing family of diabetic primers which have appeared within the last decade. That it has reached a fourth edition is sufficient indication of its success and ability to meet competition. It represents the therapeutic application of conclusions arrived at by clinical experiment and experience in the Mayo Clinic. Dr. Wilder still adheres to diets planned with strictly limited amounts of carbohydrate and protein, having found that high carbohydrate diets tend to increase the difficulty of treatment. The book is intended for a guide to the patient and his physician. Medical terminology has been omitted, but the patient needs the guidance of a physician in the interpretation of the book.

M. P. H.

The Nutrition of Healthy and Sick Infants and Children. Second Revised Edition. By E. Nobel, C. Pirquet, and R. Wagner. Trans. by Benjamin M. Gasul. Price $3.50. Philadelphia: F. A. Davis Company, 1929, pp. 243.

This book presents the "Pirquet system of nutrition." Although somewhat artificial, the whole system is ingenious and harmonious. Its usefulness would depend, however, upon an understanding of the new vocabulary which is invented. When the advice is compared, it is evident that the Austrian authors are recommending practically the same methods as our own authors.

CURRENT LITERATURE

KATHLEEN M. LEWIS

American Journal of Diseases of Children

Vol. 40, October, 1930

Effects of insulin and epinephrin on the blood acetone in fasting children. L. Salmonsen—p. 718.

The optimum conditions for the precipitation of casein from human and from cow's milk. C. C. Wang and A. A. Wood.—p. 787.

*A new cereal mixture containing vitamins and mineral elements. F. F. Tisdall, T. G. Drake and A. Brown.—p. 791.

Vol. 40, November, 1930

The effect of phosphorous in rickets. E. L. Compere —p. 941.

*Milk sugar in infant feeding. B. W. Jarvis.—p. 993.

The carbon dioxide absorption curve of infants fed lactic acid, hydrochloric acid and boiled cow's milk. D. C. Darrow.—p. 1016.

A new cereal mixture containing vitamin and mineral elements. A cereal has been devised which combines the portions of grains richest in vitamins. It is composed of wheat-meal, oatmeal, corn-meal, bone-meal, wheat-germ, dried brewers' yeast, and alfalfa. It resembles the ordinary finely milled part-grain cereals in that it is palatable and does not produce a laxative or irritating effect on the intestinal tract. Five of the six known vitamins are present in appreciable amounts. This mixture has been used for the past three months in a children's hospital of over 300 beds and has proven valuable.

Milk sugar in infant feeding. Lactose is well tolerated by the infant when the other elements of the formula are made more available for digestion. Boiling and stirring the formula for three minutes makes the protein and fat of cow's milk more easily digested, thus making it a more favorable medium for the use of lactose than the unboiled milk. The lactose-fed infant resembles, but does not equal the breast-fed infant in firmness of tissue and resistance to infections. Age-weight for age-weight, the lactose-fed infant possesses more living tissue than does the infant fed on vegetable sugars. Lactose formulas make easier complementary and supplementary feedings, with less danger of refusal by either the breast-fed or the bottle-fed infant. They also [illegible] the dangers of habitual anorexia [illegible]ipation.

American Journal of Physiology

Vol. 95, October, 1930

Action of insulin on the motility of the gastro-intestinal tract. J. P. Quigley and B. O. Barnes.—p. 7.

Relationship between vitamin C and some phases of reproduction in the guinea pig. M. Goettsch. —p. 64.

Effect of continuous intravenous injection of epinephrin on the carbohydrate metabolism, basal metabolism and vascular system of normal men. C. F. Cori and K. W. Buchwald.—p. 71

Maternal and fetal blood sugar changes under various experimental conditions. J. S. Stein and J. Tulgan.—p. 178.

A study of the Islands of Langherhans *in vivo* with observations on the circulation. B. N. Berg.—p. 186.

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*Studies in the physiology of vitamins. The effect of administration of large amounts of water on the time required for development of the anorexia characteristic of deficiency of the vitamin B complex. G. R. Cowgill, H. A. Rosenberg and J. Rogoff.—p. 537.

*The metabolism in pregnancy. IV. The nitrogen metabolism. A. W. Rowe, D. Gallivan and H. Mathews.—p. 592.

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*Studies on diabetes insipidus. H. Bourquin.—p. 66.

*The metabolism in pregnancy. V. The carbohydrate metabolism. A. W. Rowe, D. E. Gallivan and H. Mathews.—p. 94.

The metabolism in pregnancy. VI. The respiratory metabolism and acid elimination. A. W. Rowe, D. E. Gallivan and H. Mathews.—p. 101.

*Diet in relation to reproduction and lactation. P. D. Wilkinson and V. E. Nelson.—p. 139.

Studies in the physiology of vitamins. The effect of administration of large amounts of water on the time required for development of the anorexia characteristic of a deficiency of the vitamin B complex. In the determination of

this experiment, five dogs were used. All received large amounts of vitamin B in the form of vitavose to insure maximum storage of the vitamin before beginning the test. When the test began, each animal, except the control, was given, in addition to the usual allotment of water and vitamin deficient food, as large a volume of water by stomach tube as could be tolerated without vomiting. Each dog was kept in a metabolism cage in order that the volume of urine might be determined. When each animal developed anorexia no change in procedure was made for about a week. The loss of appetite was then proved due to a lack of vitamin B, first by negative tests with non-vitamin containing materials, and second, by a positive test result with vitavose. The experiment was then repeated without the forced adminstration of fluids until anorexia again developed.

In every case of forced fluid administration, the anorexia characteristic of vitamin B deficiency developed in approximately one half the time required when water was not administered.

The metabolism in pregnancy. IV. The nitrogen metabolism. In an investigation in which over two hundred normal, healthy pregnant women were observed, it was determined that the nitrogen elimination during pregnancy is lowered, but is still at a level superior to that of maintenance. Further, the urea percentage diminishes, the major portion of the difference being absorbed by the ammonia and residual nitrogen factors. Uric acid is also increased. The same thing is true in the first few months after delivery, the uric acid alone falling to a more nearly normal level.

Studies on diabetes insipidus. Experiments on dogs allowed to survive forty to 150 days after injury to the hypothalamus and hypophysis indicate that diabetes insipidus is not a deficiency condition and that the nature of the disturbance produced determines its development.

After complete destruction of the hypophysis and hypothalamus, the results indicate that diabetes insipidus is not a deficiency phenomenon; that the mammillary bodies are essential to the phenomenon and that the polyuria is caused by a diuretic substance or irritation to the hypothetical centers controlling salt and water metabolism.

The metabolism in pregnancy. V. The carbohydrate metabolism. In pregnancy the appearance of glucose is more or less common. After mammary glands begin their activity lactose appeared in forty per cent of the cases. Twenty-seven to thirty-five per cent showed sugar at some time during pregnancy. Eighteen per cent showed repeated recurrence of glycosuria.

Diet in relation to reproduction and lactation. Rats fed on a diet of soy bean, casein, salt and dextrin developed normally. When the percentage of soy bean was reduced, the rate of reproduction increased while the percentage of mortality of young decreased. This diet was then supplemented with beef and hog liver which resulted in increased lactation. When soy bean was removed from the diet and replaced by hog liver the rats on such diets developed more normally.

American Journal of Public Health

Vol. 20, October, 1930

Home pasteurization of milk. L. Arnold.—p. 1065.
Milk-borne disease in Massachusetts. G. H. Bigelow and F. C. Forsbeck.—p. 1094.
An effective and practical definition of pasteurization. L. C. Frank.—p. 1105.

Vol. 20, November, 1930

The control of thermophilic bacteria in pasteurizing plants. M. W. Yale and R. S. Breed.—p. 1192.
*A bacteriological study of grade A pasteurized milk. C. Brooks.—p. 1209. Mobile milk laboratories. T. Parran.—p. 1219.

Vol. 20, December, 1930

The precise evaluation of light therapy in experimental rickets. J. W. M. Bunker and R. S. Harris.—p. 1287.

A bacteriological study of Grade A pasteurized milk. Grade A pasteurized milk was used in an attempt to establish standards for interpreting results of routine bacteriological examinations of pasteurized milk at the government laboratories. Eighty-seven specimens were used. Pasteurized milk should

not be classed below Grade A unless it contains more than 2,000,000 groups of bacteria per cc.

Archives of Pediatrics

Vol. 47, September, 1930

Malnutrition in infancy due to chronic infection. H. Herman and P. Cohen.—p. 537.

*The treatment of celiac disease from the standpoint of vitamin deficiency. V. V. Rice.—p. 572.

My child won't eat. C. Sweet.—p. 582.

Vol. 47, October, 1930

*The use of powdered milk and milk derivates in the concentration of infant foods. A. F. Abt and B. F. Feingold.—p. 603.

Recent developments in the use of evaporated milk in infant feeding. F. S. Rice.—p. 647.

Vol. 47, November, 1930

*The value of human milk during the year after childbirth. H. W. Pooler.—p. 698.

*Alimentary anemia. W. W. Anderson.—707.

Feeding convalescent cases of colitis. M. M. McCord. —p. 724.

Vol. 47, December, 1930

The advantages and limitations of condensed milk in infant feeding. O. L. Stringfield and J. A. Tobey.—p. 769.

The treatment of celiac disease from the standpoint of vitamin deficiency. Recent studies indicate that celiac disease is a nutritional disturbance brought about by the deficiency of vitamins. A child, seventeen months of age, with celiac disease, on a diet consisting of powdered protein milk, lactic-acid milk, vitavose, and spintrate, made rapid recovery. Many have improved on a high protein, low carbohydrate and fat diet, but in the case reported quicker recovery was made.

The use of powdered milk and milk derivatives in the concentration of infant foods. Because some infants need greater requirements than the average of forty to fifty calories per pound, a concentrated diet must be given. The addition of powdered milk and milk derivatives helps to solve the problem of concentrating formulas without creating digestive disturbances in the infant. Even in severe or stubborn cases of diarrhea caused by the former concentrated diets of fat, when condensed milk or powdered skim buttermilk have been resorted to, striking results were noted. The caloric value can be increased without increasing the volume. The decreased fat intake tends to decrease development of diarrhea while the greater viscosity relieves vomiting.

In addition to their value in digestive disturbances, powdered milk, powdered skim buttermilk and commercial derivatives are easily used and mothers and nurses can be readily instructed as to their administration.

The value of human milk during the second year after childbirth. Mother's milk is superior to cow's milk in fat, iron, and even in quality of the protein, although inferior in the quantity of the latter. It is much safer than unsanitary milk from cows, or the tea and coffee which is often resorted to by shiftless mothers, but human milk should always be supplemented by foods rich in iron and calcium. Conclusively, certain economic and social conditions justify breast feeding during the second year after birth.

Alimentary anemia. Three children with a hemoglobin below fifty per cent were presented for this study. Treatment response with transfusions and a change of diet was rapid. The majority of cases occur between three months and two and one-half years. Although children, weakly at birth, are likely to suffer, there are two group divisions of alimentary anemia: 1, children showing malnutrition and 2, children that are plump, and hearty eaters. This is a definite type of anemia, concerned with the diet, hygiene, the reserve of iron stored in the liver, and the general growth and development of the body.

Hospital Management

Vol. 30, October, 1930

Feeding 455 patients and personnel at Atlantic City Hospital. N. McGurran.—p. 74.

Statistics of food service of value. M. Fitzhugh.—p. 98.

Vol. 30, November, 1930

*Why we make up our menus a week ahead. M. Smith.—p. 68.

Vol. 30, December, 1930

Twelve advantages of a good storeroom. J. A. Dent. —p. 25.

Ten ways to woo a patient's appetite.—p. 68.
One cent a meal difference means $7,500 a year. E. E. King.—p. 64.
Food costs in relation to per capita cost.—p. 70.

Vol. 31, January, 1931

Cafeteria license fee threatened.—p. 46.
Food costs in the U. S. P. H. S. Hospitals.—p. 70.

Why we make up our menus a week ahead. In order to consider oven capacity, duplication of labor, hours of kitchen help, and due care in buying, menus are planned a week in advance. This gives ample time for supplies to be purchased and ordered from the storeroom, thus avoiding confusion. Diet nurses have time to look over the menus, discuss them with the patients, and make special requests for small additions to the menu. The advantages of planning menus a week ahead outweigh the disadvantages. The menus are served exactly as planned, thus avoiding waste of any kind. If anything is left over it is used in serving employees.

Journal American Medical Association

Vol. 95, October 4, 1930

Orthopedic aspects of chronic rheumatism or arthritis. R. B. Osgood.—p. 992.
Childhood problems. E. L. Richards.—p. 1011.
Child psychology. J. E. Anderson.—p. 1015.

Vol. 95, October 11, 1930

Hypothyroidism. L. M. Warfield.—p. 1076.
*Scurvy in adults. S. R. Mettier, G. R. Minot and W. C. Townsend.—p. 1089.
The cereals in nutrition. Editorial.—p. 1101.

Vol. 95, October 18, 1930

The future of the diabetic child. P. White.—p. 1160.
Eat and stay thin. Editorial.—p. 1182.
Effect of diet on growth of fibroblasts. Editorial—p. 1183.

Vol. 95, October 25, 1930

*Studies in infant nutrition: lactose and a maltose-dextrin preparation. J. R. Gerstley.—p. 1233.

Vol. 95, November 1, 1930

Studies in pernicious anemia. Editorial.—p. 1348.
The protein requirement of the preschool child. Editorial.—p. 1351.

Vol. 95, November 15, 1930

Eat and grow fat. Editorial.—p. 1507.
The theory of diabetes. Editorial.—p. 1508.
Nature of the substance in liver. Current comment.—p. 1509.

Vol. 95, November 22, 1930

*Allergy and the acid-base balance. H. Beckman.—p. 1582.

Vol. 95, December 20, 1930

*Pellagra-like skin lesions appearing in the course of a ketogenic diet. R. H. Guthrie.—p. 1912.
Diet and dental caries. Editorial.—p. 1915.
The consumption of sugar and diabetes. Current Comment.—p. 1917.

Vol. 95, December 27, 1930

*Sprue: some points on etiology, diagnosis and especially treatment. A. Bessler.—p. 1961.
The vitamin A content of butter. Current Comment.—p. 1978.

Vol. 96, January 17, 1931

*Bronchial asthma caused by liver and extract diet in patient suffering from primary anemia. E. Matzger.—p. 110.

Vol. 96, January 17, 1931

The corn sugar decision. Editorial.—p. 194.
Storage of calcium. Current comment.—p. 197.

Vol. 96, January 24, 1931

Hereditary diabetes mellitus. E. Kennedy.—p. 241.

Scurvy in adults. Scurvy is found rarely in adults and the cases reported have generally been elderly males. It is sometimes called bachelor scurvy. Scurvy may be precipitated by infectious diseases in persons with certain types of poor nutrition. Arterioclerosis may favor the development of the disease. Anemia is often common in adults with scurvy. Foods rich in vitamin C cause a rapid regeneration of the blood. Neither iron nor the substance potent in pernicious anemia appear to accomplish these effects. The bone marrow in two cases of scurvy, when examined microscopically, appeared to be the same as in secondary anemia. Vitamin C is very beneficial in regeneration of the blood and in the healing of the lesions of scurvy in adults.

Studies in infant nutrition. Chemical studies showed that lactose does not deserve its bad reputation. It can be given to a normal infant in good hygienic environment without undue risk, even with the additional digestive strain of cow's milk. The amount of lactose in the diet is not nearly so important as the factor which influences its absorp-

tion. The relation of lactose to protein is important.

Allergy and the acid-base balance. The author points out the value of a consideration of the acid base balance of the body as a possible important factor in the cure of allergic manifestations. He notes the alleviation or absence of allergic symptoms under certain conditions when the acidity of the body tends to be increased. He suggests that the more effective cure of asthma in young children is due to the fact that the acid base balance is more readily swung to the acid side. In allergy, hypochlorhydria is frequently found. The efficacy of calcium therapy is shown to be greater when the blood acidity is increased. Calcium therapy increases the fixed acid of the blood.

Pellagra-like skin lesions appearing in the course of a ketogenic diet. There is a possibility of pellagra-like skin lesions being caused by a poorly supervised ketogenic diet. When diet restrictions were removed, the lesions disappeared also. No positive conclusion can be drawn, however.

Sprue: some points on etiology, diagnosis, and especially treatment. Efficacious results were obtained on ten adults suffering with sprue by treatment with the high liver diet, transduodenal lavage, correction of intestinal infection, and removal to a colder climate. Better results were obtained by diet treatment of sprue patients than of pernicious anemia patients.

Bronchial asthma caused by liver and extract diet in patients suffering from primary anemia. A patient suffering with asthma and anemia was put on a diet of raw liver with the result that the asthma became worse and more persistent and the anemia was aggravated appreciably. Liver extract was used with the same result.

Journal of Biological Chemistry

Vol. 88, October, 1930

Quantitative differentiation of vitamins A and D. H. C. Sherman and H. K. Stiebeling.—p. 683.

Antirachitic substances. On the relation of the isoergosterols to vitamin D. W. M. Cox and C. E. Bills.—p. 709.

Vol. 89, November, 1930

On the mechanism of phlorhizin diabetes. II. The relationship between the nutritional state and the glucose tolerance. H. G. Deuel.—p. 77.

The relation between alkali deficit and glucose tolerance in the dog. H. J. Deuel and M. Gulick.—p. 93.

A comparison of the highly unsaturated acids of beef, hog and sheep brains. J. B. Brown and W. C. Ault.—p. 167.

*Soft pork studies. IV. The influence of a ration low in fat upon the composition of the body fat of hogs. N. R. Ellis and J. H. Zeller.—p. 185.

*The stability of vitamin G as measured by its growth stimulating effect. N. B. Guerrant and W. D. Salmon.—p. 199.

The relative amounts of iodine absorbing material in various plants. D. Marine, E. J. Baumann and B. Webster.—p. 213.

*The effect of crude fiber on calcium and phosphorous retention. M. A. Bloom.—p. 221.

*Evidence for the presence of a third factor in the vitamin B complex of yeast. G. Z. Williams and R. C. Lewis.—p. 275.

*The toxic effect of fish liver oils and the action of vitamin B. E. R. Norris and A. E. Church.—p. 437.

Vol. 89, December, 1930

Observations on the serum calcium, proteins and inorganic phosphorous in experimental vitamin B deficiency and inanition. V. Schelling.—p. 575.

A comparison of the influence of iodized milk and of potassium iodide, administered directly, on the size and iodine content of the thyroid gland of rats. W. E. Krauss and C. F. Monroe.—p. 581.

Bile salt metabolism. V. Casein, egg albumin, egg yolk, blood and the meat proteins as diet factors. H. P. Smith and G. H. Whipple.—p. 689.

Studies on the creatine and nitrogen content of the whole rat after the feeding of a variety of diets and after nephrectomy. A. Chanutin.—p. 765.

Vol. 90, January, 1931

*Human milk studies. VI. Vitamin potency as influenced by supplementing the maternal diet with yeast. S. S. McCosh, I. G. Macie and H. A. Henscher.—p. 1.

The manganese metabolism of the rat. J. T. Skinner, W. H. Peterson and H. Steenbock.—p. 65.

*The effects of vitamin deficiency upon the coefficients of digestibility of protein, fat and carbohydrate. R. R. St. Julian and V. G. Heller.—p. 99.

The rôle of iron and copper in the growth and metabolism of yeast. C. A. Elvehjem.—p. 111.

*The ineffectiveness of manganese in nutritional anemia. W. E. Krauss.—p. 267.

*Further evidence of the complex nature of vitamin B. Evidence that a third factor exists. C. H. Hunt and W. Wilder.—p. 279.

*The physiological effects of diets rich in egg white. F. S. Daft and R. D. Coghill.—p. 341.

Soft pork studies. IV. The influence of a ration low in fat upon the composition of the body fat of hogs. Thirteen animals, grown from weaning on a ration of brewers' rice as a basal feeding, synthesized and stored fat at a normal rate. There was a tendency for the fat to increase in firmness with the increasing weight of the animal. On analysis the principle fatty acids found were oleic, palmitic and stearic, while linoleic, myristic and arachidic were found in small amounts. A decrease in linoleic acid content, which occurred up to a weight of 170 pounds, appeared to account for the increase in saturation of the fat which accompanied the increase in weight.

The stability of vitamin G as measured by its growth stimulating effect. By the usual type of animal experimentation the growth-stimulating effect of vitamin G was studied. Dry heating and autoclaving the previously standardized yeast showed a decrease of about twenty per cent. The decrease in the growth stimulating qualities due to diaminization was not proportional to the decrease in amino nitrogen. Molecular oxygen and reduction by hydrogen sulphide had no effect on the G potency of the yeast. Larger decrease in G factor resulted when irradiated in an alkaline rather than an acid medium.

The effect of crude fiber on calcium and phosphorus retention. Much discussion has taken place on the question of whether crude fiber increased the retention of calcium and phosphorous, or prevented their utilization by the body tissues. In order to determine the differences of an ash and crude fiber diet, the author used rats for the experimental animal and spinach for the food. No difference in mineral retention was noticed between raw or cooked spinach. The ash diets showed a much higher retention of calcium and phosphorous than the diet of crude fiber.

Evidence for the presence of a third factor in the vitamin B complex of yeast. In this experiment white rats were fed on a basal diet deficient in all of the factors of vitamin B contained in yeast. To this were added whole yeast, and the water-alcohol-soluble fractions, antineuritic fraction B, the anti-pellagric fraction B_2 and B_3 and the remaining residue. Those rats receiving the B_1 fraction failed to grow, developed lesions, lost weight and died. Those receiving B_2 lost weight and developed symptoms of polyneuritis. The combined fractions B_1 and B_2 when supplementing the basal diet, were not alone sufficient for optimum growth and health. With the addition of the whole yeast extract containing the B_3 residue to the previous feeding, the resulting growth was normal. This third factor, B_3 contained in the residue, is insoluble in water or alcohol and is thermostable. Results do not show adequate evidence that the third fraction is even a part of the vitamin B complex. No successful method for the extractions of this third fraction from yeast residue has been reported.

The toxic effect of fish liver oils and the action of vitamin B. Systematic feedings of an excess of different fish liver oils produce a toxic effect, not due to an excess of vitamin A or vitamin D, and readily counteracted by large amounts of yeast. Small doses of isoamylamine and choline produce identical symptoms with a vitamin B deficiency, which may also be prevented by sufficient yeast to supply vitamin B. Therefore fish liver oils, because they yield the same toxic effect, must contain those amino acids, isoamylamine and choline.

Human milk studies. VI. Vitamin potency as influenced by supplementing the maternal diet with yeast. The breast milk of three women was separately tested for vitamin B content, by tests on young rats. The potency was then tested after an addition of ten grams of yeast daily to the dietary. It was found that the vitamin B potency varied inversely with the volume of milk excreted daily. The important feature was that the milk produced with the yeast supplement caused a more economical utilization of food ingested by the rats, as shown by

the fact that while their voluntary intake decreased, growth remained the same or even reached a higher level.

The effects of vitamin deficiency upon the coefficients of digestibility of protein, fat and carbohydrate. The experiment was carried out upon test animals of the same litter. They were fed a diet free of the vitamin, or vitamins, in question until definite specific deficiency conditions were displayed. The missing vitamin was then added to the ration of part of the animals and a comparision of the metabolism made. Vitamin A, B_1, B_2, C and D were tested. The coefficient of digestibility of the protein, fat and carbohydrate were the same in every case. The conclusion, therefore, was that the vitamins tested probably did not affect the digestive processes in any way.

The ineffectiveness of manganese in nutritional anemia. Albino rats made anemic by an exclusive whole milk diet showed no improvement when their ration was supplemented by manganese (0.1 mg.) or iron (0.5 mg.) daily. This was not in accord with previous experimental evidence from some other laboratories. It was felt that the difference in technique of housing and feeding was responsible for conflicting results, rather than impurities in the salts used.

Further evidence of the complex nature of vitamin B. Evidence that a third factor exists. The third factor is present in the non-absorbable factor and it is this factor, along with the vitamin B, which is essential for growth as well as the prevention and cure of pellagra. All these factors are apparently necessary for the natural growth and well being of rats. This new or third factor is distinct from the antineuritic and antipellagra factor.

The physiological effects of diets rich in egg white. Diets of boiled egg whites, cooked for 20 minutes, resulted in a nutrition disorder and speedy death in the majority of the rats fed on such diets. On a ration containing sixty-six per cent of dried egg white from either raw, Chinese, or firm fresh eggs, symptoms which strikingly resembled those of pellagra developed later in the rats surviving the first few weeks. These symptoms may be prevented or cured by feeding twenty per cent of dried beef liver.

Journal of Home Economics

Vol. 22, October, 1930

The White House conference on child health and protection. M. Van Rennsselaer.—p. 803.
Abstracts of papers on food and nutrition.—p. 857.

Vol. 22, November, 1930

Old and new emphases in the teaching of nutrition. M. S. Rose.—p. 878.
Certified food colors. H. T. Herrick.—p. 891.
*Shrinkage of roast beef in relation to fat content and cooking temperature. L. M. Alexander.—p. 915.
Utilization of milk and inorganic calcium and phosphorous. M. T. Potter and M. K. Kramer.—p. 923.

Vol. 22, December, 1930

Old and new phases in the teaching of nutrition. M. S. Rose.—977.

Vol. 23, January, 1931

Home Economics in Poland. M. Roman.—p. 32.
*Further data on the cost of gas and electricity for cooking. R. A. Potter and M. E. Dresslar.—p. 67.

Shrinkage of roast beef in relation to fat content and cooking temperature. Well-fatted, high grade, beef ribs shrink more, by drippings (fat and solid matter), and less by evaporation (water), then lean low grade ribs. Shrinkage increases with increased oven temperature. The more thoroughly beef is cooked the greater is the shrinkage. For beef ribs of different grades there is proportionably greater variation in drippings than in evaporation. There is a direct relation between the amount of shrinkage and oven temperature, and the degree of cooking when pairs of cuts are roasted.

Further data on the cost of gas and electricity for cooking. Experiments to determine the relative cost of gas and electricity for cooking purposes were conducted in the home economics department of the University of Washington in 1923, and again in 1928, when new types of automatically controlled ovens were put on the market. Original records of the first experiments were used as a basis for

the second, and the procedure was practically the same. Stoves of family size and standard make were used. It was found that, on the average, the total operating cost in the gas range was 4.7 per cent lower than in the electric ranges. Judged by results of this experiment, there is little difference in the cost of cooking by gas and electricity at the present rates in Seattle.

Journal of Nutrition

Vol. 3, November, 1930

*Iron requirement in early childhood. M. S. Rose, E. McC. Vaheteich, E. Robb and E. M. Bloomfield.—p. 229.

A chemical and immunological study of egg protein obtained under restricted diets. L. Gerber and R. H. Carr.—p. 245.

The vitamin B and G contents of certain yeast samples. E. J. Quinn, F. B. Whalen and J. G. Hartley. —p. 257.

*A study of the absorption and retention of vitamin A in young children. J. I. Rowntree.—p. 265.

Glycogen formation in rats. II. Diets containing approximately eighty-seven per cent of the total caloric value in the form of sucrose, lard and casein respectively. E. M. Greisheimer and O. H. Johnson.—p. 297.

*Meat in nutrition. I. Preliminary report on beef muscle. P. M. Nelson, M. H. Irwin and L. J. Peet.—p. 303.

*Meat in nutrition. II. Some dietary factors influencing lactation. L. G. Peet, P. M. Nelson and E. A. Smith, —p. 313.

Meat in nutrition. III. Hemoglobin formation. L. G. Peet, E. A. Smith and P. M. Nelson.—p. 325.

Iron requirement in early childhood. An experiment to determine the minimum iron balance for young children was carried out with a child two years and seven months of age. The diet consisted of milk, wheatena, pea pulp, toast, orange powder diluted with water, potato and prune pulp. Special precaution was taken to prevent contamination with dust and iron. The experiment ran nine days with no portion of food or excreta lost. The average daily intake of iron was 4.64 milligrams and the average daily balance was negative to the extent of 1.10 milligrams. Hence the minimum requirement would be about 5.7 milligrams. A margin of fifty per cent, however, should be allowed for growth, so that the intake should be 8.5 milligrams or .076 milligrams per 100 calories.

A study of the absorption and retention of vitamin A in young children. Experiments were carried on to determine if vitamin A was excreted in the urine and if there was a significant loss through the feces. Eight children and four infants were used as subjects. Young rats depleted of their store of vitamin A by a deficiency diet were fed vitamin A from the excretions of the children. As a check, vitamin A was extracted from duplicate diets and fed a second group of rats. The results as noted in the responses of the rats showed a marked fecal loss of vitamin A, but none excreted through the urine.

Meat in nutrition. I. Preliminary report on beef muscle. Rats were fed on a basal diet high in phosphorus and calcium, and containing ample vitamins A, B, C, D and E furnished in extra meat fed. The proteins in the diet were furnished by lean beef muscle. The first litter of rats grew at an excellent rate. They gave birth to vigorous healthy young, but failed to rear them, either because of cannibalism or failure of milk supply. No such difficulties were noticed in rats on the control diet without the meat present. Hair balls were found in the stomach and intestines of meat-fed animals and were frequently the cause of death. The meat ration was ample for growth and reproduction, but did not meet the needs of lactation.

Meat in nutrition. II. Some dietary factors influencing lactation. Mothers on increased meat diet plus fifteen per cent yeast weaned the largest percentage of young in three generations. But in the first and second generation a larger percentage were reared by the mothers fed the basal diet with autoclaved yeast in addition.

Modern Hospital

Vol. 35, October, 1930

*Factors that influence ratio of personnel to patients. M. T. MacEachern.—p. 73.

Meeting hospital requirements in college dietetic courses. R. T. Baker.—p. 142.

Vol. 35, November, 1930

*Factors that influence ratio of personnel to patients. M. T. MacEachern.—p. 59.

*How food cost studies may be applied to menu planning. S. M. Gillam and I. Denman.—p. 156.

Vol. 35, December, 1930

Judging comparative values of kitchen equipment. V. R. Bliss.—p. 71.
Varying the Christmas menu for therapeutic diets. Sister Victor.—p. 130.
The water softener—an industrious and economical servant. E. M. Partridge and L. L. Bradney. —p. 140.
Should employees live within the hospital? —p. 80.

Vol. 36, January, 1931

Judging comparative values of kitchen equipment. V. R. Bliss.—p. 85.
A study of costs and personnel in general hospitals.—p. 100.
What is the dietitian's status? M. A. Harmon.—p. 138
Training hospital dietitians for the future. H. Mallory.—p. 140.
Simplifying the food and dish conveyor problem.—p. 154.

Factors that influence ratio of personnel to patients. Older hospitals require more personnel, also hospitals built on a horizontal plan require more workers than those built on a vertical plan. Small wards, length of hours, position of utility rooms, and labor saving equipment influence the ratio of personnel to patient.

Factors that influence ratio of personnel to patients. An interesting study of the personnel requirement for all groups and sizes of hospitals demonstrate that an average ratio cannot be figured out until further investigations have been made. One employee per patient is the advised temporary figure.

How food cost studies may be applied to menu planning. This is an article which every administrative dietitian should read and apply to her particular problem of food and food costs, the most interesting problem of administrative dietetics.

Watch yourself . . . and your children for between-meal fatigue

Take a moment to eat or drink something sweet. It digests quickly and overcomes fatigue.

FATIGUE is a daily problem of the man or woman at work and the child at play. If allowed to continue, the resistance that the system should have is lowered.

Fatigue, however, can be overcome quickly and safely by a sweet snack of some sort. A piece of candy, flavored and sweetened milk drinks, or, for children, the traditional snack—bread and butter lightly sprinkled with sugar—are recommended.

Such food eaten between meals is quickly digested and the sugar is ready at once to renew vigor. The Sugar Institute, 129 Front Street, New York.

"Good food promotes good health"

ANNOUNCING

The Fourteenth Annual Meeting and Exhibit of

THE AMERICAN DIETETIC ASSOCIATION

at the Hotel Gibson, Cincinnati, Ohio

October 19-21, 1931

also

A Post Convention Trip to Mammoth Caves

NEWS NOTES

The Fourteenth Annual Convention of the American Dietetic Association will be held October 19–21, 1931, at the Hotel Gibson, Cincinnati, Ohio. It is not too early now to begin making plans for attending this year's convention. The Post Convention trip proved such a pleasant one to those few members who took it that it has been decided to have another one this year, though a much shorter journey, to Mammoth Caves. Mrs. Thelma Tubbs Currier of Peter Bent Brigham Hospital, Boston, the national program chairman this year, will provide a program of interest to everyone in the profession. The local committee comprised of Ruth Senteff, chairman of Local Arrangements; Ruth Reineke, chairman of Hospitality; Polly Cowan, chairman of Local Program; Muriel Holle, chairman of Trips; Eleanor Maclay, chairman of Publicity; Helen E. Hauck, chairman of Tickets; Gertrude Lauche, chairman of Exhibits; have already planned for the recreation of those attending. They have provided trips which will give everyone at the meeting an opportunity to see the many famous institutions in the vicinity. The June issue of The JOURNAL will give you more detailed information about the meeting which will be one worth including in your 1931 time budget.

Miss Alice M. Flint has been a life member of the Association for some time. Due to a misprint, her name was listed as a junior member, in the December issue, instead of the name of Miss Arlene Flint of Champaign, Ill.

The Baltimore Dietetic Association have acquired the College Club for their regular meeting place this year. The October meeting included reports on the American Dietetic Association and American Home Economics Convention. In November, the Association held their meeting at the State Normal School in Towson, with Joan Rock of Standard Brands, Inc., as demonstrator. A dinner meeting was held at the Woman's City Club in December. Dr. Lewellys F. Barker, formerly of Johns Hopkins Hospital spoke most interestingly on "Food Cults." Members of the Washington Association and several local doctors were guests. At the January meeting, the speaker was a Personnel Director of one of the department stores.

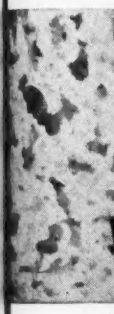
Anna Trentham, formerly of the Gas and Electric Company, has accepted a position with the Home Economics Extension Department of the University of Maryland.

Mae MacDonald, head dietitian at West Baltimore Hospital comes here from the Jane Adams Hospital in Perrysburg, N. Y.

Mildred R. Wilson, assistant dietitian at Church Home Infirmary, spent her vacation abroad and attended the Passion Play.

Ora Mae Tally of Texas State College for Women and University Hospital, Ann Arbor, Michigan, is an assistant dietitian at Sheppard Pratt Hospital.

The Public School Cafeterias and Home Economics Departments, in coöperation with the Dairy Council, are developing a Health Program this year. An assembly period in each school is being given over to the work of improving food selection. At this time a slide talk is given which involves the life of Johns Hopkins and his contributions to the health of humanity. A Committee have been working on charts which will be of assistance to the students in choosing their lunches to balance the remaining two meals of the day. In some schools, students who are unable to buy sufficient lunch have food supplied free. In all cases this movement is either sponsored by some organization or by individuals. Selection and health are placed before the students daily by written food combinations taken from that day's menu. These are put in different form each day and have proved of great interest.



CAKE BATTER PHOTOGRAPHED THROUGH MICROSCOPE

Batter made with cheaper baking powder shows large, irregular gas bubbles.

Royal cake batter shows steady leavening action . . . note tiny, uniform bubbles.

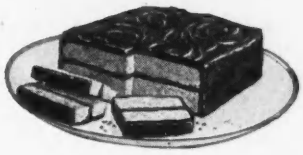
FINISHED CAKE MAGNIFIED

This photo shows coarse, uneven texture and large "air holes" that dry out cake.

Note the fine, even-grained texture of cake made with Royal Baking Powder.

These Amazing Photos . . .

show why some cakes dry out . . why others stay fresh and moist . .



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The British Columbia Dietetic Association sponsored a program of the combined Western, North Western and British Columbia Hospitals' Association in August. Dr. H. W. Hill, Director of Laboratories of Vancouver General Hospital and a professor at the University of British Columbia, spoke on "Nutrition with Reference to the Philosophy of Life." Dr. Martha Koehne led the discussion which followed. Mr. Harry Beard described "The Preservation of Fresh Foods by Freezing." Dr. Koehne talked informally on "Some of the Newer Phases of Nutrition." "Food Costs and Food Buying" was discussed by Mr. G. W. Olson, Superintendent of the California Hospital in Los Angeles. The last lecture of the session was given by Mr. J. G. Jarvis on "The Canadian Meat Inspection System."

In October the Association met in the Nurses' Home of the Vancouver General Hospital. Ethel C. Pipes presented a report of the September meeting of the American Dietetic Association.

At the November meeting, Anne McMaster told of her three months' trip in Europe, and described various types of food service abroad. At this meeting, following the resignation of Miss King as president of the Association, Dorothy Young was elected President and Phyllis J. Lee vice-president.

The December meeting was devoted to a discussion on the high carbohydrate, low fat diet in diabetes mellitus.

Chicago Dietetic Association. At the November meeting Dr. Michael Leventhal, Michael Reese Hospital, spoke on the subject of Diet and Pregnancy.

In December Dr. Robert W. Keaton, of the Illinois Research Hospital, gave a very interesting talk on Obesity. At the business meeting the following officers were elected. President, Sarah Elkin; Vice-President, Lida Jamison; Secretary, Lillian Drugswald; Treasurer, Marion Gregg.

On January 23 and 24 the Chicago Dietetic Association sponsored the fourth Annual Midwest Conference for Dietitians in Chicago. Elsie Nelson acted as chairman of arrangements. The meetings were attended by one-hundred and thirty-five guests, representing six states and Canada.

On January 23, the meeting was held in the Northwestern University Medical Building. Millie Kalsem presided. Ruth Atwater, Director of Home Economics, National Canners Association, spoke on Helps to the Institutional Dietitian in Solving her Canned Food Problems. The importance of the correct time of the season and process for canning was emphasized. The different types of metals suitable for cans for different fruits and vegetables were discussed. Cans made of a metal, having a steel plate base with a very thin tin covering are used quite extensively. Highly colored fruits, especially cherries and berries, in order to preserve their color, should be canned in the bright gold colored enamel tin. Enameled lined tins are used for canning corn to prevent corn-black from developing. The four different grades of canned fruits and vegetables were outlined with special emphasis placed on the quality of foods used for the different grades and the degree of sirup used for the different standards of canned fruits. Dr. Tell Nelson, Rush Medical College, Research Clinic of Allergies, University of Illinois, gave a paper on Food Allergy. Dr. Nelson related some of his interesting experiences in diagnosing and treating individuals susceptible to food allergy. Eggs, milk, wheat and meat were some of the most common foods causing the disturbances.

Millie Kalsem presided at the dinner meeting at the Illinois Women's Athletic Club. Several violin solos comprised the musical program. Dr. Russell Wilder, of the Department of Medicine, University of Chicago, discussed interesting new developments in the treatment of obesity. He recommended the use of diets for all types of obesity, to be accompanied by other treatment if necessary. Short talks by honorary members of the Association and guests concluded the program.

Mrs. Thoma and her staff of the Michael Reese Hospital were hostesses to the delegates at a luncheon Saturday. At this meeting, with Mrs. Thoma presiding, an Illinois State Dietetic Association was or-

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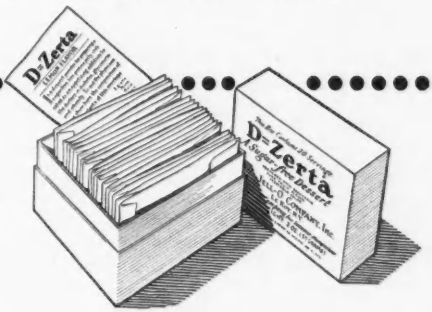

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ganized. Following this preliminary meeting Sarah Elkin, president of the Chicago Dietetic Association, presided. Dr. Aaron Arkin, Assistant Professor, Rush Medical College, University of Chicago, gave an instructive talk on the Diseases of the Ductless Glands. He briefly outlined the location and function of each of the eight ductless glands of the body, and spoke of some of the diseases and results of impairments of each. The ductless glands determine the general appearance of man, his stature, the quantity of and distribution of fat, the length of arms and legs, the type of face, the color and amount of hair, the muscle tone, the timbre of the voice, certain emotional expressions, and, to a certain extent, personality and character. The final talk was given by Vera McGowen, manager of two tea rooms in Evanston, Illinois. Her subject was, Catering to the General Public. Miss McGowen emphasized the importance of beauty as the keynote for surroundings in dining rooms or for tray service. She especially stressed the value of dainty china and linen. A restful, home-like atmosphere should prevail. Miss McGowen also spoke of the proper method for cooking foods, especially meats, potatoes, and vegetables. The usual method of keeping foods hot in a steam table for a prolonged time can be avoided by cooking small amounts at intervals, thus permitting foods to be served when they are most palatable. A short business meeting concluded the convention.

The Cincinnati Dietetics Association held its November meeting in the Assembly Room of the General Hospital. Mrs. Linda Brown who is in charge of one of the large department store tearooms of the city discussed many interesting features of her wide range of experience in commercial dietetics.

In December a dinner meeting was held at the Woman's Building of the University and members of the Household Administration staff provided an interesting program. Elizabeth Dyer, head of the department, greeted the guests. Rosamund Cook discussed buying. Dr. Bertha Lamson spoke on mental hygiene.

At the January meeting, Dr. Clarence A. Mills, Professor of Experimental Medicine at the Medical College of the University gave a talk on the use of vitamin B in the treatment of diabetes.

Fernetta Lusher has accepted the position of dietitian at the Flower Hospital in Toledo, Ohio.

Viola Hart, recent student at Michael Reese Hospital in Chicago, is now assistant dietition at Bethesda Hospital.

Isabel Barrett, formerly connected with the Y. W. C. A. cafeteria was married to Mr. Elmer Yutzi. They are both graduates of Ohio State University and are living in Lewisberg, Ohio, where Mr. Yutzi is a teacher in the High School.

Doris Rowe, a graduate of McDonald Institute of Guelph, Ontario, is now assistant in the Y. W. C. A. cafeteria. She took her student work at Syracuse General Hospital and was also connected with the Y. W. C. A. of that city.

Mary Frances Miller, a graduate of both the College of Industrial Arts, Denton, Texas, and of Columbia University, is also a recent assistant in the Y. W. C. A. cafeteria.

The Grand Rapids Dietetic Association elected the following officers for 1931: Gertrude Lynch, President; Helen Fenerstein, Vice-President; Helen Clarke, Secretary, Treasurer.

A rummage sale held in September made it possible for the Association to contribute $25.00 to the War Memorial Fund.

In November Dr. Lillian B. Storms of the Gerber Products Division of the Fremont Canning Company entertained members of the Association at Fremont. Mr. Gerber and his son showed them through the factory and explained the different processes of preparation and canning. Dinner was afterwards served to the group.

An open meeting for the employees of members was held in November at Butterworth Hospital. The movie film on food service taken at Pennsylvania Hospital, Philadelphia, was shown. This was followed by a talk by Dr. William M. German on hygiene in relation to food and health. The meeting was held in an attempt to interest

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and stimulate employees in better and more carefully served food.

The Greater New York Dietetic Association in December adopted its new constitution, which included a change in name from the New York Dietetic Association to the above.

A dinner meeting was held at the Constantinople Restaurant, where the proprietor spoke on Turkish politics; his wife on Turkish food. Eleanor Wells talked on her work in New Zealand; Mrs. Kwe-Pau Huang, about nutrition work in Peiping Medical College Hospital, and Evelyn R. Melck regarding nutrition work in South Africa.

The January meeting was a joint meeting with the Home Economics Club, at which Dr. Helen Mitchell spoke regarding her experiences and findings among the people of Laborador.

The Iowa State Dietetic Association held its fall meeting in Des Moines, November 13 and 14. At this meeting it was decided to affiliate with the American Dietetic Association.

Dr. P. Mabel Nelson gave a very interesting report of the Toronto convention. Dr. John G. Grant of Iowa State College hospital told of infant feeding in Saskatoon. Dr. Edwin B. Winnett of Des Moines gave a resumé of the diet in metabolic diseases. Dr. Florce B. King of Iowa State College told of research being done at the University of California on the effect of heat on the biological value of cereal products.

Lucy Guard, formerly of the Veterans' Hospital, spoke on the dietitian and Veterans' Hospitals. Josephine Wylie spoke on making the home maker food wise and conscious.

We were privileged to have Anna E. Boller present. She told the early history of The American Dietetic Association, and the advantages of affiliation with the National Association. The attendance, and the reports of the treasurer and the membership committee, all showed a satisfactory growth of our new organization.

It was announced that the next meeting would be held with the Iowa Hospital Association at Cedar Rapids and Iowa City.

The Kansas City Dietetic Association held an interesting and successful series of meetings in 1930. The January meeting was held at the Mercy Hospital, with Emily Shirkey as the hostess. Dr. Berger, pediatrician, spoke on "Infant Feeding." The meeting in February was at the Alfred Benjamin Dispensary, with Mrs. Edith Cross as the hostess for the evening. Dr. Ketchum of the staff of the Dispensary talked on the "Endocrine System." The March meeting was held at the University Women's Club. Dorothy Black, Supervisor of the Open Air Schools, told of her work in the school system. The Kansas City Power and Light Company, entertained the association at the Kansas City Athletic Club in April. Mrs. Helen Luck of their educational department was in charge. Members were urged to bring questions pertaining to institutional equipment. In May the annual banquet was held at Miss Riecker's Riviera Tea Room.

The September meeting was held at the home of Nellie Reece Evans. Miss Evans is manager of the tearoom of the Business and Professional Women's Club. Mabel Beeler, of the Federal Reserve Bank Building Cafeteria, told of her European trip and her two-day visit in Oberammergau. Bernice Kyme, chief dietitian at the Bell Memorial Hospital, gave an interesting report of the National Convention.

In October the meeting was held at the Federal Reserve Bank Building, with Miss Beeler as hostess. Dr. Lawrence Engle gave an interesting talk on "Dietary Treatment in Goitre." The following officers were elected for 1930–1931: President, Faye Buckles, Research Hospital; Vice-President, Mrs. Catherine Roberts, Bell Memorial Hospital; Secretary, Catherine Lorrimer; Treasurer, Constance Hoeffer; and Corresponding Secretary, Mrs. Mildred Powersock, H. D. Lee Mercantile Co.

Massachusetts Dietetic Association. At the November meeting of the Association Dr. Chester M. Jones, Assistant Professor of Medicine, Harvard Medical School, spoke on "Diet in Diseases of the Gastro-Intestinal Tract". The progam of the December

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meeting was in charge of student dietitians of Boston hospitals. Ida M. Cannon, Chief of Social Service, Massachusetts General Hospital, discussed "What the Dietitian is Doing for Social Case Work" at the January meeting. In February Dr. Charles F. Wilinsky, Director, Beth Israel Hospital, presented a paper on "The Dietitian—a Hospital Superintendent's Viewpoint."

Miss Van Dyke, who resigned from the Cambridge Hospital this fall, is studying at Columbia University.

Doris Venner, formerly with the Metropolitan Life Insurance Company, is now assistant dietitian at the Baker Memorial Hospital, Massachusetts General Hospital, Boston.

Dorothy Hacker is an assistant at the Food Clinic of the Boston Dispensary.

Florence Griffith, who recently completed her student course at the Peter Bent Brigham Hospital, is now assistant dietitian at the Massachusetts Memorial Hospital.

Mary Robertson, formerly assistant dietitian at the Peter Bent Brigham Hospital, is now chief dietitian at the Massachusetts Memorial Hospital, Boston.

Maude Lacey has been transferred from the metabolic laboratory to the position of assistant dietitian at the Peter Bent Brigham Hospital, Boston.

Frances E. Tompkins is at the Symmes Hospital, Arlington, Massachusetts. Miss Tompkins was formerly at the Diet Kitchen, Mt. Sinai Hospital, New York City.

Eva Hunt, who went from the Beth Israel Hospital, Boston, to a hospital in Westerly, R. I., is now dietitian at the Tacoma General Hospital, Tacoma, Washington.

Murial Redman is now dietitian at the Robert Breck Brigham Hospital, Boston.

The Dietitians Association of Philadelphia sponsored the annual Friendship Dinner at which nearly fifty women's clubs of Philadelphia and vicinity were represented. Rose T. Baker, President of the Association and toastmistress for the dinner welcomed the seven hundred guests. Miss Martha Van Rensselaer spoke on "The White House Conference," and Judge Florence E. Allen of the Supreme Court of Ohio talked on "The Value of Yesterdays." A charming musical program was also presented. Helen E. Gilson was chairman in charge of the dinner, with Mrs. Mildred G. Dickson, Mrs. Ann B. Baker, Margaret Crozier, Mary H. Thorpe, Mrs. May H. Vincent, and Emma Smedley serving on the committee with her.

Rochester Dietetic Association. An address by Dr. Stanhope Bayne-Jones, head of the department of bacteriology at the University of Rochester, and the election of officers for this year featured the first two meetings of the Rochester Dietetic Association in October and November. Officers for 1930–1931 are Gertrude Binns, president; Jane Herendeen, vice-president; Hazel Burkey of Mechanics Institute, secretary; and Ellen Guernsey, treasurer. Forty-three members of the association attended the second meeting when Dr. Bayne-Jones explained and illustrated with pictures the life cycle of the mosquito. Miss Binns president, appointed Achsah Brill, chairman of a membership committee, to be assisted by Esther Rhodes and Jane Herendeen; Effie Winger, chairman of the program committee, assisted by Eleanor Randall and Anna Paschall. Grace Carden and her assistants were hostesses.

Courses in Foods and Nutrition are given at the College of Saint Teresa, Winona, Minnesota. The work is designed primarily for members of religious communities. The courses include foods and nutrition, general dietetics, diet in disease, nutrition of children, management and cost accounting, chemistry of food and nutrition, physiological chemistry, large quantity cookery, institutional organization and administration. The courses are planned so that graduates may quality for active membership in the American Dietetic Association. Postgraduate experience will be provided in approved hospitals.

Miss R. S. Chisholm, Principal of the Emily McPherson College of Domestic Economy of Melbourne, Australia, has recently written to the Association concerning her work there. This college is a

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technical school for girls and women and offers advanced Home Economics work. Although training courses for hospital dietitians are still very new in Australia, Miss Chisholm is eager to promote the work. She extends, also, an invitation to dietitians visiting Australia to come and see her college.

Miss Katherine Middleton is a pioneer in travelling dietetic work in Canada. At the Freemasons' Hospital in Morden, Manitoba, she recently gave an intensive one-month's course in nutrition and diet in disease. She tells of the excellent coöperation of the staff nurses and doctors. The preliminary course consisted of eight one and one-half hour periods on fundamentals of nutrition and the normal diet. Part Two, consisting of nine and one-half hour periods, was devoted to diet in disease. An unusual item in this series of lectures was the lecture on "Public Health and the Food Supply." Eight one and one-half hour periods were devoted to laboratory work.

Miss Middleton, in her letter to the Association, deplored the necessity of covering so wide a field in only one month, and recommended that anyone interested in sponsoring or teaching a course of this nature, devote at least two months to it.

Mrs. Wilda H. Bradshaw writes from China: "We visited the dietary department at Peiping Union Medical College. They have a lovely place. The little dietitian was trained in the Christ Hospital in Cincinnati. In September, I had the opportunity to 'try out' Shanghai County Hospital dietary department. I had an appendectomy and although too sick to eat for a few days, later found the trays very interesting."

Shortly after the December JOURNAL went to press, word was received of the death of Miss Florence Nolan, dietitian of the Seaside Hospital of Long Beach, Calif. Miss Nolan was graduate of Ohio State University and had been active in hospital dietetics for the past ten years.

Addresses from which mail has been returned. Miss Lenfest will appreciate it if any information can be sent to the Business Office regarding the following members:

Fern L. Clark, John Sealy Hospital, Galveston, Tex.
Marion A. Dammeyer, 1441 Harvard St., N. W., Washington, D. C.
Beulah Mae DeLano, State Hospital, Meridian, Miss.
Katherine E. DeWitt, 1002 Woodward Ave, Portland, Ore.
Mary Dunning, 705 N. Michigan Ave., Cicago, Ill.
Iona Foreman, 2302 W. 39th Street, Seattle, Wash.
Mrs. Rae Snow Gilmore, 465 S. Fifth St., San Jose, Calif.
Marjory S. Haas, Mater Misericordiae Hospital, Sacramento, Calif.
Mrs. Magdalen Weber Hatfield, 6025 Lawrence Ave., Chicago, Ill.
Erma Huenfeld, 701 Crosby St., El Paso, Tex.
Grace H. Iserman, 110 W. Euclid Avenue, Pittsburg, Kan.
Selma A. Walker, Receiving Hospital, Detroit, Mich.

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WHO'S WHO IN THIS ISSUE

DR. JOHN R. MURLIN is Editor of the *Journal of Nutrition* and Professor of Physiology and Director of the Department of Vital Economics of the University of Rochester. During the war he served as Director of the Division of Food and Nutrition, Medical Department, United States Army, and from 1919 to 1922 he was Chairman of the Committee on Food and Nutrition, National Research Council.

MISS SHIRLEY C. TITUS has been deeply interested for a number of years in the problem of giving a sound educational background in dietetics and nutrition to all nurses. She was chairman of the committee which revised "Dietetics" for the new edition of the Standard Curriculum for Schools of Nursing prepared by the Education Committee of the National League of Nursing Education in 1925. Miss Titus is a member of the Education Committee of the National League of Nursing Education and of the Education Committee of the National Organization for Public Health Nursing, and Dean of the new School of Nursing of Vanderbilt University. This School is the third independent School of Nursing of university rank in the United States.

ICIE G. MACY, PH.D., is Associate in Nutrition, Children's Hospital of Michigan, and is in charge of Nutrition Research at Merrill-Palmer School. EVA G. DONELSON, B.S., is Assistant in Nutrition Research at Merrill-Palmer School. M. LOUISA LONG, M.A., was formerly Assistant in Nutrition Research at Merrill-Palmer School and is now associated with Potter's Memorial Clinic in Santa Barbara, California. ALICE GRAHAM, B.S., is Assistant in Nutrition Research at Merrill-Palmer School. MARY A. SWEENY, M.A., is Assistant Director of Merrill-Palmer School and in charge of its Physical Growth Department. M. MARGARET SHAW, at the time this study was made, was a student at the Merrill-Palmer School. She is now Professor of Home Economics at the University of South Dakota.

DR. JAMES A. TOBEY is co-author with Dr. S. J. Crumbine of the standard book on milk entitled "The Most Nearly Perfect Food," published by Williams and Wilkins of Baltimore. He is also author of the recently published "Riders of the Plague," and was a member of the Committee on Milk of President Hoover's White House Conference on Child Health and Protection, to which he contributed the section on the nutritional value of the processed milks.

C. P. SLATER is assistant purchasing agent for the State University of Iowa. During the ten years he was superintendent of city school systems in the central state he laid a foundation for his present work by taking graduate work at the University of Chicago and the University of Iowa. Because of his administra-

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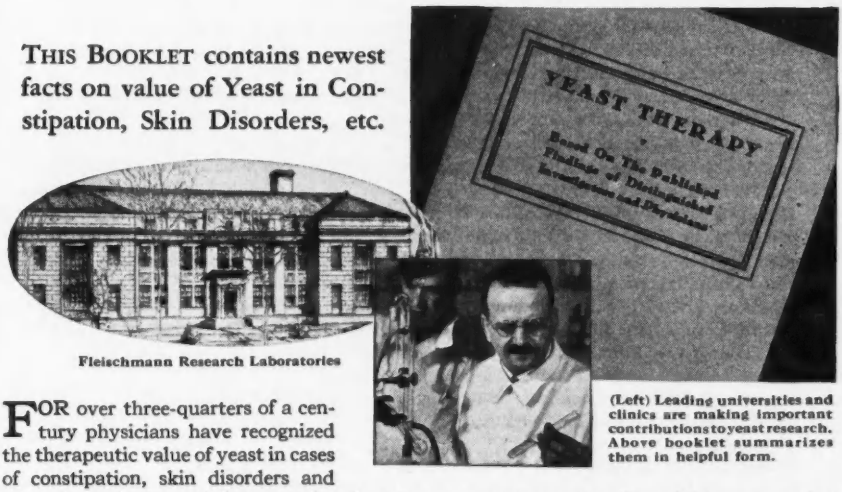

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